that the Interstate Commerce Commission should so fix rates that in a given year a railroad or a group of railroads failed to earn a fair return. Under the provisions of the Cummins bill the railroad or group of railroads, in this case, would have no recourse. In other words, in any year when a railroad or group of railroads failed to earn a fair return it or they would lose the difference between what was actually earned and what would have been a fair return, but in any year when a railroad or group of railroads earned more than a "fair return" it or they would have the entire surplus taken away. There is still another important point to be considered. The Interstate Commerce Commission under this bill is to determine what is "fair value" and also what is "a fair return." In view of the past regulation of the railways by the Commission no railway manager or financier would feel any confidence that under these provisions the rates would be made high enough to enable the railroads to pay a reasonable return upon the existing investment or upon new capital. The *Railway Age* has been strongly opposed to government ownership and management. It has been in favor of a return of the railroads to private operation at the earliest practicable date. But this paper would rather see a return to private operation indefinitely postponed than to see the railroads returned to private operation under provisions such as those in the Cummins bill which we have mentioned. Government operation is not popular. It is not likely to become popular, and therefore its continuance for some time longer might not result in government ownership. But if the railroads should be returned to private management under legislation such as the Cummins bill, it is certain that their operation would not be efficient, and that they would not be able to raise sufficient capital adequately to develop their facilities. If under private control their operation was inefficient and they did not adequately develop their facilities, the result probably would be the growth of an irresistible agitation for government ownership. Therefore, in our opinion, the surest way to bring about permanent government ownership in the United States would be to enact just such provisions as those of the Cummins bill. It is astounding that men can oppose government ownership, can believe in the superior efficiency and desirability of private management, and yet can draft and support legislation which is unjust in itself, and the certain effect of which would be to prevent private operation from being efficient and to make government ownership inevitable.

The Freight Car Situation

PRACTICAL CAR MEN are decidedly of the opinion that the physical condition of freight cars generally is bad—extremely bad—and far worse than it was when the government took over control of the railroads about 21 months ago. Frank McManamy, assistant director of the Mechanical Department, Division of Operation, outlined the bad order car situation in his testimony before the Senate subcommittee which is investigating the coal situation; this was reported in the *Railway Age* of September 12, page 505. Mr. McManamy indicated that the administration is doing everything it can at this time to get the cars into good condition. He stated, however, that after the armistice a reduction was made in the working hours each week because of the falling off of traffic and in order to reduce the amounts paid for punitive overtime. Further reductions were made in March because of the necessity for further economy on account of expenditures for maintenance of equipment as compared with the test period.

The expenditures for the maintenance of equipment during the three-year test period were subnormal for two reasons; during the earlier part of the period traffic was light and the financial condition of the railroads was such that it was necessary to keep the maintenance charges at a minimum; during the latter part traffic was extremely heavy and the congestion was so great that the cars were only given sufficient repairs to keep them in a running condition. The latter situation continued to exist during the time the railroads were under government control up to the armistice.

It was apparently the intention of Congress to have the government hand the railroads back to their owners in practically as good condition as when they were taken over. The Railroad Administration in trying to accomplish this introduced a clause into the contract with the railroads to the effect that the government would expend for maintenance of equipment each year a sum based upon the expenditures made by the roads themselves during the three-year test period, equated, however, to allow for the difference in the cost for material and wages. There seems to be no question but what this method will be unfair to the owners of the railroads so far as freight cars are concerned and that if it is followed through to a conclusion and the government expends no more money on the equipment than is allowable on this basis, the condition of freight cars will be deplorable when the roads are turned back to their owners at the end of the year.

There are three reasons why it will be unfair to the railroads to measure the condition of freight car equipment on a basis of the expenditures made for maintenance, even assuming that the three-year test period is a fair one for comparison.

In the first place, while the wages have been greatly increased there has been a considerable falling off in the efficiency of labor. There are several causes for this. Large numbers of experienced men were taken from the car department into war service; then too, many of the better classes of mechanics were attracted into the manufacture of munitions and war supplies because of the exorbitant wages that were paid by these industries. The abolishing of piece work was a great blow to efficiency and production. Added to all of this is the spirit of industrial unrest which has been more or less general and which has resulted in a very considerable restriction of production.

Secondly, under former conditions the M. C. B. rules were such that cars were returned more or less promptly to their owners, most of whom took a real pride in the upkeep of their equipment and were able to carry out carefully developed plans for the betterment and modernization of the freight car equipment. Now that the cars are pooled only an extremely small proportion of any one road's equipment is on its lines at any one time and a large part of it may never get near the owning line. The roads do not take the same interest in foreign equipment that they do in their own. The cost of making repairs to foreign equipment is much heavier than it should be because of the difference in standards and types of construction. These things, added to the heavy traffic conditions which existed during the greater part of 1918, have resulted in the general practice of making temporary repairs where in many cases the cars should have been given heavy repairs or have been rebuilt. This is an expensive practice and the effect of the "patch and run" policy is quite evident by an inspection of freight cars in any large yard or repair shop.

In the third place, the steady introduction of more powerful locomotives and the general tendency to introduce economies in operation by increasing the train loads made it necessary a number of years ago for nearly all of the important roads to give special attention to the physical condition of their freight cars and to adopt extensive programs for the steady retirement of the older and more or less obsolete

that the Interstate Commerce Commission should so fix rates that in a given year a railroad or a group of railroads failed to earn a fair return. Under the provisions of the Cummins bill the railroad or group of railroads, in this case, would have no recourse. In other words, in any year when a railroad or group of railroads failed to earn a fair return it or they would lose the difference between what was actually earned and what would have been a fair return, but in any year when a railroad or group of railroads earned more than a "fair return" it or they would have the entire surplus taken away. There is still another important point to be considered. The Interstate Commerce Commission under this bill is to determine what is "fair value" and also what is "a fair return." In view of the past regulation of the railways by the Commission no railway manager or financier would feel any confidence that under these provisions the rates would be made high enough to enable the railroads to pay a reasonable return upon the existing investment or upon new capital. The *Railway Age* has been strongly opposed to government ownership and management. It has been in favor of a return of the railroads to private operation at the earliest practicable date. But this paper would rather see a return to private operation indefinitely postponed than to see the railroads returned to private operation under provisions such as those in the Cummins bill which we have mentioned. Government operation is not popular. It is not likely to become popular, and therefore its continuance for some time longer might not result in government ownership. But if the railroads should be returned to private management under legislation such as the Cummins bill, it is certain that their operation would not be efficient, and that they would not be able to raise sufficient capital adequately to develop their facilities. If under private control their operation was inefficient and they did not adequately develop their facilities, the result probably would be the growth of an irresistible agitation for government ownership. Therefore, in our opinion, the surest way to bring about permanent government ownership in the United States would be to enact just such provisions as those of the Cummins bill. It is astounding that men can oppose government ownership, can believe in the superior efficiency and desirability of private management, and yet can draft and support legislation which is unjust in itself, and the certain effect of which would be to prevent private operation from being efficient and to make government ownership inevitable.

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cars, and the rebuilding or modernization of cars which with a reasonable expenditure would give good service under the new conditions. In most cases it has been found necessary almost entirely to disregard these programs during the last three years and this has added greatly to the average cost of upkeep of the individual cars.

Because of these reasons it would seem that the Railroad Administration should recognize the necessity for adopting a more liberal policy in its freight car repair program, realizing that in order to return the equipment to the roads in as good condition as when it was taken over, a far greater expenditure for maintenance will be justified than is indicated by a literal interpretation of the clause in the contract which relates to the maintenance of equipment.

Reasons for Improved Financial Results

As was pointed out in last week's *Railway Age*, the railways, under government control, in July—for the first time since September, 1918—earned the entire return guaranteed by the government to the companies. The financial rsults gained show a great improvement over those of the early months of the year. It is worth while to study the statistics of earnings and expenses to find out, if possible, how this improvement has been secured.

The low water mark of this year, in the matter of financial return, was touched in March. In that month the ratio of operating expenses to earnings was over 92 per cent and the net operating income was only 16 per cent of the government's guarantees to the companies. In July the ratio of expenses to earnings had been reduced to less than 79 per cent, and net operating income was $343 per mile, as compared with $344 per mile in July of the three test years. Investigation of the tendencies shown between March and July by total earnings, and by the larger items of expense—cost of transportation, of maintenance of equipment and of maintenance of way—will throw light on how the improvement in financial results was obtained. Additional light will be afforded by comparison of the tendencies of earnings and the larger items of operating expenses between March and July, 1916, and 1917, the last years of private operation, with their tendencies between March and July this year.

The following table shows in percentages the changes in operating revenues, total operating expenses, and the cost of maintenance of equipment, of maintenance of way and of conducting transportation which occurred between March and July, 1916, 1917, and 1919:

Percentage of increase (or decrease) March to July, 1916, 1917 and 1919:

	1917	1919	1916
Operating revenues	9.9	23.	4.4
Operating expenses	3.9	3.3	*
Maintenance of equipment	1.4	*	*
Maintenance of way	12.	12.5	14.
Conducting transportation	1.5	1.6	5. d

* Less than 1 per cent change.
d Decrease.

This table shows that there was a very large increase in total earnings between March and July, 1919. The increase amounted to 23 per cent, while between March and July, 1917, the increase in total earnings was less than 10 per cent. This indicates that railway traffic was at a very low ebb last March and was getting back to normal in July. With an increase of 23 per cent in total earnings, which reflected a corresponding increase in the amount of traffic handled, there was an increase between March and July, 1919, of only 1.6 per cent in transportation expenses. These figures indicate a great increase in operating efficiency. Between March and July, 1917, while the increase in earnings was less than 10 per cent, the increase in transportation expenses was 1.5 per cent. While transportation expenses are held down while total earnings are increasing, there is a real increase of economy and of profits, because anything which is once saved in the cost of conducting transportation is permanently saved. The Railroad Administration and the operating officers and train service employees of the railways deserve the greatest credit for the manifest increase in efficiency in conducting transportation which occurred between March and July.

While a reduction of transportation expenses is always a real saving, the same thing cannot be said regarding a reduction of maintenance of expenses. A reduction of maintenance expenses may reflect either an increase in efficiency of management or deterioration of the physical properties of the railroads. The table shows that while between March and July, 1919, there was an increase of 23 per cent in the amount of business handled, there was no increase at all in the expenditures for maintenance of equipment, and an increase of only 12.5 per cent in expenditures for maintenance of way. On the other hand, between March and July, 1917, while the increase in business and earnings was less than 10 per cent, there was an increase of 1.4 per cent in expenditures for maintenance of equipment, and of 12 per cent in expenditures for maintenance of way. An increase in the amount of business handled should ordinarily be accompanied by an increase in expenditures for maintenance and equipment. Furthermore, under normal conditions, there should always be a relatively large increase in expenditures for maintenance of way between March and July. During the winter months it is impossible in most of the United States to carry on much maintenance of way work, and after the frost goes out of the ground in the spring, maintenance of way work should be rapidly pushed and should reach its maximum about July.

The statistics indicate that the management of the railways was stringently holding down expenditures for maintenance in July, 1919. If we compare 1919 with 1916, the impression that this was the case will be deepened. In 1916, between March and July, the increase in total operating revenues was only 4 per cent, and while there was no increase in expenditures for maintenance of equipment, there was an increase of 14 per cent in expenditures for maintenance of way.

The conclusion which these statistics would suggest is that within recent months the efficiency with which transportation has been handled has been greatly increased, but that there has not been a normal increase in expenditures for either maintenance of equipment or maintenance of way and that the physical properties are being allowed to deteriorate. This conclusion as to the deterioration of the physical properties can be supported by other evidence. Freight cars undoubtedly have been allowed to run down, although recently efforts have been made to put them in better shape. Furthermore, much evidence could be cited to show that recently, and especially in July, the expenditures for maintenance of way have not been as large as they normally have been and should be.

To sum up, the greater part of the improvement in financial results shown, has been gained by an increase in the efficiency with which transportation has been conducted. On the other hand, a substantial part has been obtained by a too stringent exercise of control over expenditures for maintenance. The showing made is creditable, on the whole, but the net income is larger than it should be if the railroads are to be returned to their owners in as good condition as they were when the owners turned them over to the government. Of course, an analysis of the changes occurring between two months of a year is not conclusive, but most of those who know what have been the policies of the Railroad Administration, will agree that the results shown in these two months are what would naturally be expected to be produced by the policies being followed.

A Plan for Employees' Ownership and Management

THE RAILWAY AGE is opposed to the Plumb plan. We are opposed to it because it would involve government ownership and employees' management of railroads. We have not heard any good reason why the people of the United States should buy the railroads, turn them over to the employees to manage, pay the interest on the railroad debt and also pay from taxes all losses which the employees' management incurred. We should not, however, be opposed to employees' management if it were based upon employees' ownership.

It may be thought that employees' ownership would be difficult to bring about, but it would be very easy to bring about. The employees are now being paid approximately $3,000,000,000 a year in wages. The cost of living in the United States, according to the most reliable estimates, has increased only about 75 per cent within the last five years, while the average railway wage has increased about 90 per cent. The employees, therefore, on the average could now save approximately one-fifth of their annual wages, and at the same time live about as well as they were able to five years ago. If they should save one-fifth of their wages the total annual saving would be $600,000,000.

The amount of railroad stock outstanding in the hands of the public on June 30, 1916, was $6,315,000,000, and it is not much more now. The average dividend paid was 5½ per cent. Presumably, if the railways are returned to private operation they will be so regulated as to enable them to continue to pay an average dividend of 5½ per cent. If the employees should save $600,000,000 a year from their wages, should invest it each year in railroad stocks and should also invest in railroad stocks the dividends they received from their stocks, they would in five years own $3,350,000,000 in stock, or a majority of all the stock outstanding. This would give them control of the ownership and management of the railroads of the United States. If they should continue to save in the same way, at the end of nine years they would have saved in wages and dividends $6,671,000,000,

With this they could purchase all the stock now outstanding, and also a few hundreds of millions dollars' worth of bonds.

These calculations are based upon the assumption that, on the average, they would have to pay par for their stock. But there are many more railroad stocks selling below par now than above it. Therefore, the employees, if they bought stock at anything like the present market prices, could acquire ownership of the railroads for much less than we have estimated. We have not extended the calculations to bonds, but it would be an easy matter for the present generation of railroad employees, by the practice of merely reasonable thrift, to acquire all the railroad stocks and bonds in existence and leave them as a heritage to their children.

Of course, if the employees owned even a majority of the stock they could elect all the directors, and through them manage all the railroads. This plan would have great advantages over the Plumb plan from the standpoint of both the public and the employees. Its adoption would necessitate the practice by railway employees of the same thrift which the farmer or the small storekeeper practices in order to acquire his property. Since the employees could so easily acquire the railroads by the practice of reasonable thrift, why should the public tax itself to buy the roads for the employees, and at the same time, leave the farmer, for example, burdened with the necessity of saving the money which he must raise to buy any farm he may want to manage?

Under the Plumb plan, if any surplus earnings were made by the railroads, the public would get half of them and the railroad employees half, while under our plan of employees' ownership the railroad employees would get in dividends all of any increase in profits. On the other hand, if under the Plumb plan any losses were incurred the public would have to pay them, while under the plan we have outlined any losses incurred would all have to be borne by the employees. From one standpoint, therefore, this plan would be better and from one standpoint worse for the employees than the Plumb plan. If, however, the employees knew that every increase in the efficiency of the management was going to redound greatly to their benefit while every reduction of efficiency was going to result in loss to them, the incentive they would have to exert themselves for efficient operation of the railroads would be much more powerful than it would be under the Plumb plan.

The effects of this incentive to promote efficiency would be seen in every direction. Under the Plumb plan the employees would have very little incentive to entrust the management of the railroads to railroad officers of the greatest ability, but if the employees were the actual owners of the railroads they would have the same incentive as the present stockholders to put in charge of the management the ablest men that could be obtained and to give them a free hand in order that they might get the best results. Furthermore, under employees' ownership the employees would be much more competent to select the best men for managers than they would be under the Plumb plan. The practice of enough thrift to enable them to buy the railroads, and their ownership of large amounts of property would give them the experience and the vision of business men and would enable them to judge much better than they can now of the qualities which a good railroad manager should possess, of the things he ought to do and of how he ought to do them.

We have not the slightest notion that the plan for employees' ownership and management of the railroads we have outlined will be adopted; but when this plan is placed beside the Plumb plan it brings out strikingly the absurdities and iniquities of the latter. When it can be shown that the railroad employees could so easily and in so short a time become the managers of the railroads by the simple process of becoming their owners, the question naturally arises as to why they should be carrying on an enormous propaganda to get the other people of the country to buy the railroads for them? It may be replied that investment in railroad stocks would not be a safe one for the savings of railroad employees. Would it, then, be safe for the savings of the American people? If it would not be a good investment for railroad employees, what are we to think of all the stories which the spokesmen of the employees tell of the vast profits which other people make by investing in railroad stocks? The advocates of the Plumb plan say that if the roads were turned over to the management of the employees they would effect vast savings which would greatly increase net earnings. If the employees are sure that they could effect vast economies, why don't they back their confidence with their own money, and thereby reap all the vast profits to be made, instead of asking the public to take all the risks of ownership for the possibility of getting half the profits?

While we do not believe that the plan for employees' ownership we have outlined will be adopted, we do believe that if the solution of the railroad problem is to be furthered by giving employees larger voice in the management, the increase of their influence in the management must also be accompanied by an increase of their investment in the enterprise.

The main trouble with part of the plans for future ownership and management of the railroads which have been put forward is that they contemplate giving employees more power in the management without giving them any responsibility for the results of the exercise of their power. Good results are never obtained by giving increased power unaccompanied by increased responsibility.

Railroads Propose Amendments to Cummins Bill

An Abstract of the Memorandum Filed by Alfred P. Thom, General Counsel for the Railway Executives

WASHINGTON, D. C.

ALFRED P. THOM, general counsel for the Association of Railway Executives, has filed with the Senate Committee on Interstate Commerce a memorandum of suggestions for the amendment of the Cummins bill, drafted by a sub-committee, which is now under consideration by the full committee. Some of his comments on various sections of the bill are in part as follows:

Section 2.—It is suggested that the word "five" in line 12 be changed to "ten," so that there will be a funding for ten years instead of five. The objections to having indebtedness other than that incurred for additions and betterments evidenced by demand notes, are forcibly set out in a letter by E. G. Buckland, president of the New Haven road, from which I make the following extract:

My first suggestion is that the provisions for funding the indebtedness of the railroads to the government will not leave them in a condition where they can thereafter finance themselves. I feel that all of the indebtedness should be funded by taking bonds for not less than ten years at a rate of interest not exceeding 5 per cent. The distinction between advances for additions and betterments and advances made to meet maturing loans does not warrant the difference. The inability of the railroads to refund their own loans maturing during the war was not so much their fault as the fact that the government was in the market for all and more than all of the money available for investment. If the provisions of section 2 are enacted the indebtedness of this company to the government at the end of federal control will be financed as follows: $17,000,000 having been incurred for additions and betterments would be evidenced by first mortgage bonds and $43,964,000, having been loaned to meet maturing obligations would be evidenced by notes payable upon demand at the rate of 6 per cent per annum. This last mentioned loan of $43,964,000 is more than twice what the company requested of the Railroad Administration. In April, 1918, when this company's outstanding notes aggregating $43,964,000 matured the company had authority to issue its preferred stock for $45,000,000, bearing 7 per cent cumulative dividends. One-half of this stock at that time was underwritten by the bankers who held or by their customers who were interested in the maturing notes and there was good promise of a considerable portion of the remainder of the stock being subscribed for at par. All that this company asked the Railroad Administration to do was to loan the company so much as it could not raise by the preferred stock issue. The company stated at the time that with this new money its credit would be rehabilitated and it would not ask the administration for any further assistance. Instead of adopting this suggestion the Railroad Administration insisted upon taking all of the company's securities as collateral and loaning it the entire amount of $43,964,000, the effect of which was to deprive the company of the credit which this collateral would have given it and force it to rely upon the government for all future financing.

"Now, it is obviously unfair to put the company in the position at the end of federal control of having a demand note indebtedness of $44,000,000 hanging over it and giving it only five years in which to refund the $17,000,000 advanced for additions and betterments. Obviously any proper financing should give the company at least ten years at a reasonable rate of interest and evidence its indebtedness by bonds secured by a first mortgage or a first lien upon its property.

As to this whole section, we desire to renew our suggestion that the indebtedness incurred during federal control for additions and betterments should be funded without security. The railroads, upon return to their owners, will be confronted by a task (which presents extraordinary difficulties) of obtaining, under market conditions that will then exist and under the conditions surrounding this special industry, the necessary money to perform their public duties; and it is not wise to deprive them of, or to seriously impair, their existing capacity to borrow by an effort to obtain security for the government. The risk that the government will take under these conditions will not be large, as all of the obligations of the companies usually classed as strong may reasonably be relied on as good.

Section 5.—This section relates to the transition period, and provides a method for readjusting the rates of the carriers with the view of establishing a proper relationship between their revenues and expenses. It contains, during such period of readjustment, a guaranty of the standard return for a period of time limited not to exceed five months.

It will be noted that this provision provides no method to insure an adjustment of state rates to the alarming conditions of increased costs. The period of five months is altogether too short to make the adjustment of interstate rates. It is manifestly much too short to secure an adjustment of state rates, with no power contained in the act to bring that about, yet the state traffic should bear a part of the increased burden growing out of the increased cost of labor and materials, unless it be the policy of Congress to impose that entire burden on interstate commerce. There has been an increase of approximately a billion dollars a year in wages during federal control and increases in prices of all railroad materials and supplies in keeping with the high cost of living generally. It would hardly seem fair or wise to impose this entire increase of burden on interstate commerce.

Instead of providing an affirmative method of securing this change, the bill apparently imposes no limitation upon the power of the various state commissions to reduce existing rates on both passengers and freight in their respective states to the full extent allowed by the various state laws, and certainly leaves such state commissions free to prevent any increases which may be found necessary in order to make the requisite readjustment between revenues and expenses.

In our opinion, the power of Congress is, under the commerce clause, adequate to fix all rates of interstate carriers, state as well as interstate, and the policy to do so should be continued as a permanent policy. But if the policy of the bill to allow state commissions to make state rates in the first instance is adhered to, that power ought not come into existence until at least the effects of the war upon the transportation system have been reasonably removed and until the Interstate Commerce Commission is of the opinion that the safety of the railroads during the transitional period following the war has been provided for in a rate structure which shall include both state and interstate rates.

This might be accomplished by a provision requiring the Interstate Commerce Commission, as soon as practicable after the passage of the act, to readjust both state and interstate rates, and that no change shall thereafter be made in the state rates without the approval, after conference with the state commission, of the Interstate Commerce Commission; but when any state rate has thus been changed with the approval of the Interstate Commerce Commission, that then

the provisions of the bill as contained in section 43 shall thereafter control.

We have heretofore urged, and now respectfully urge again, that the entire duty of readjusting rates so as to produce a proper relation between the revenues and expenses of the carriers should be assumed by the government itself. The government's action has disturbed the relation between revenues and expenses, and in fairness it should take the burden of restoring that relationship so as to redeem the assurance of the President that investors in railroad securities might rest assured that their rights and interests would be as scrupulously looked after by the government as they could be by the directors of the several railway systems. If, instead of properly maintaining the relation between the revenues and expenses, it turns out that the railroads, loaded up, during federal control and by governmental authority, with a scale of expenditure hitherto unknown, and the government does not make a corresponding readjustment of their rates, the roads would be ruined, instead of being "scrupulously looked after" by the government. We, therefore, insist that it is the government's duty to restore, on its own initiative, the proper relationship between the revenues and expenses.

Section 6.—We suggest that after the word "provided" a semi-colon be inserted, followed by the following: "and, if no other valuation is at the time available, the commission shall proceed in a summary and expeditious way to determine such value for the purposes hereof." It is manifest, we think, that the fixing of rates under this provision should not require the commission to wait for the result of the valuations under the federal valuation act, but should be required to take action on the basis of the best values the commission can arrive at, subject, of course, to be readjusted when the complete valuation is available.

Section 6.—We respectfully request that these provisions, which relate to the taking of a part of a company's earnings from lawful rates, be omitted.

Congress is now engaged in the effort to establish an adequate system of transportation for the commerce of the country. The problem of Congress may be said to be one of credit almost entirely. To insist on taking a part of what a carrier can save from its earnings on lawful rates through industry, economy, good management, and fortunate location would undoubtedly seriously discourage investment in this class of property, and would in that way defeat the very object which Congress is trying to accomplish of creating a condition of adequate credit for the carriers. Who will care to invest in railroad enterprises which, at best, are subject to great uncertainty as to the extent of governmental control that may at any moment be asserted if a power is claimed to deprive the investor of a part of his earnings at lawful rates, and thus of all hope of legitimate reward for good management, economy, and valuable location? If this Congress can set one measure of such taking, another Congress may go still further until the line of clear confiscation is reached, and investors will inevitably be deterred from entering a field of investment as to which such a power is asserted—and yet the very purpose of legislation is to attract and insure such investment. It would certainly amount to a leveling down of railroad efficiency, rather than to a leveling up. We respectfully submit that it can not be justified from any standpoint of wise public policy.

Section 7.—We suggest that the words "approved by the commission" be stricken out, and in place of them be inserted the words "fixed by the board," or "fixed by the board with the approval of the President." The object of this is to prevent the placing on the board of this unnecessary mark of subordination to the commission as would be the result if the employees of the board must have their compensation approved by the commission.

Section 10.—We suggest that at the end of line 11 these words be inserted: "and other carrier property, parts of existing systems." In this paragraph it is manifestly the purpose to have a consolidation of all the carrier's property, not simply of the railway property. Boat lines which are part of a system should be included in the consolidation, and we assume that it is the purpose to do this.

Section 11.—The provision here referred to gives the board power as to traffic not routed by the shipper, to direct its movement after its arrival at a transfer point, "whenever a fair distribution of traffic and the public interests may require." This would presumably be regarded by the board as a direction to control the routing of traffic. Where traffic is now left unrouted by the shipper it is presumably upon the theory that the carrier may, by its own routing, provide the most expeditious and efficient transportation of the property with proper regard for practical operating conditions. The provision is objectionable for the following reasons,

(a) The initial carrier under the Carmack amendment is responsible for damage occurring on any line through to ultimate destination and should therefore, to protect itself, be permitted to choose the lines over which it shall pass.

(b) The initial carrier in connection with unrouted traffic is bound, under the decisions of the commission, to select the route over which the lowest rate applies, and a determination of the relation between the amount of such traffic to be so routed and the remaining traffic to be apportioned under any order of the board, would present complications in the waybilling of all traffic at all initial points.

(c) Traffic susceptible of division among several lines at any given junction point is the accumulation of a multitude of shipments received at a multitude of stations on the route of the carrier bringing such traffic into the junction point, and also on the route of a large number of connecting lines. In order to expedite the movement of traffic and to permit tracing en route for the shipper it should be, and customarily is, waybilled through from point of origin by the agent at such point. In actual practice distribution of traffic at junction points is therefore not made after its arrival at such points, but at initial points on such line and its connections. It would be difficult, if not impossible, to conform waybilling at such multitude of initial points to such distribution of traffic as might be required by the board at the junction point.

(d) Less than carload traffic is handled in many instances in through merchandise cars passing over several lines. Any requirement for the distribution of such traffic at junction points would require either breaking of bulk or the running of an unnecessary number of through merchandise cars, and would prevent consolidation of loads so as to utilize cars to full capacity, and thereby involve additional expense and delay.

(e) Any rule which would prevent carriers from making arrangements for the forwarding of traffic in the most expeditious and economical way would increase the aggregate expenses in any given rate-making group on the basis of which rates from such groups as a whole are predicated.

Section 12.—The provisions of sub-paragraph (c) of section 12 will constitute a very great impediment in the way of voluntary consolidations, which it is the policy of the bill to encourage. If a railroad proposing to consolidate with other lines must submit to a readjustment of its capitalization, there will be manifest reluctance on part of many lines to undertake consolidation. It is, we think, true that any road that would be approved by the commission, or by the board, or both, as proper to make such consolidation, would be a road not over-capitalized. Most of the important roads are not subject to that charge, even in popular understanding. A provision much more likely to bring about consolidation would be one which would confine the capitalization of the property after the acquisition of one road by the other, to the outstanding stocks and bonds, at par, of

the corporation making the acquisition, plus the value of the property acquired by it, as determined by the commission. Under paragraph (d), page 21, the approval of the commission and board to any proposed consolidation is required, and the question of whether or not a road in undertaking such consolidation is itself over-capitalized is safeguarded.

Section 12.—It being uncertain as to when the result of the valuation of the railroads will be available, it is suggested that the following be added after the word "consolidation," in line 14, in order to prevent delay in making the consolidations which are approved: "provided, however, that in cases where the commission finds that, to await such valuation, would unduly delay any such consolidation, and, from evidence of a general nature, shall be of the opinion that the capitalization proposed to carry out such acquisition or consolidation will not exceed the value as ultimately found of the said aggregate properties, the commission may enter an order to that effect, and may permit such acquisition or consolidation without awaiting the completion of the formal valuation."

Section 13.—It is respectfully suggested that a power should be here inserted to enable a corporation which had begun a consolidation during the permissive period, in accordance with the plan prescribed by the board of transportation, to complete the consolidation by the compulsory method of condemnation after the period of voluntary consolidation shall have terminated. This power should be conferred in terms direct and specific enough to enable the carrier having begun this consolidation, to condemn the property of the carriers in the group already devoted to the service of transportation. Doubt is entertained as to whether a general power of condemnation would be construed as authority for the condemnation of properties already devoted to a public use.

Section 18.—Without discussing at this time the desirability of representatives of the classified employees and of the public being on the board, we desire to call attention to the fact that there are a great many cases in which, if as many as two of the directors from each of these classes be required, the four thus chosen would constitute a majority of the board. There are a great many companies which have only five directors, some which have six, and many have only nine. The laws of Texas limit the number of railroad directors to nine. Four out of nine would seem to be a too large proportion to give to interests having no financial investment in the property. Certainly four out of five or six would be too large a proportion.

Section 21.—There seems to be no power here to create a new federal corporation to build new lines of railroads. While the construction of new lines or systems, independent of existing systems, may be a remote prospect, manifestly there should be a power to build such lines, and it is respectfully suggested that this be provided for in the bill.

Section 21.—We would suggest that after the word "railways" in line 15 the following be inserted: "and other carrier property." This is not only proper in itself, but is in harmony with the provision on page 34, lines 14 to 20. It is necessary in order to permit the continuance of existing water service in connection with the rail service.

Section 21.—It is suggested that fuller powers be conferred upon corporations organized under the act, than are contained in the six specifications of power contained in the bill.

Section 24.—By this provision, as it stands, the Interstate Commerce Commission is made the judge of whether any purpose for which a carrier may desire to issue securities is "compatible with the public interest." The commission is thus empowered to judge whether it is incompatible with the public interest for a company to provide for maturing obligations by a new issue of securities, or to make any capital expenditure whatever to be provided for by new issue. In other words, the provision, as it stands, makes the commission the financial manager of the railroads, substituting its discretion for the discretion of the board of directors, and giving it power to prevent any capital expenditures which it may see fit. This makes the commission the real manager of the carriers and seems to us too great a power to lodge in it.

There are some things which ought, by the law itself, to be recognized as compatible with the public interest. This enumeration in the law prevents abuses by the carriers. There should be, in our judgment, a general power to do other things "compatible" with the public interests, and, as to these, the propriety of securing the approval of the commission is admitted.

Again, the draft, as it stands, prevents any securities being issued except for a purpose "within the company's corporate powers." This raises the question as to whether it is within the company's corporate powers to issue securities contrary to a statute of the state of its own creation, such as a statute requiring it to obtain the authority of a state authority before issuing the securities. If this be a proper interpretation, it will destroy the whole purpose of the enactment proposed in the contemplated bill. To prevent this, the first two lines might be made to read, "unless it be for a lawful object within its corporate purposes, etc."

Section 24.—The provisions here referred to relate to the service of notice on the state authorities. It may be that such notice will become jurisdictional and a bad service might vitiate the issue of securities. It is impossible to define in the statute what "the appropriate state authority" may be, as these differ so much with different states. To get rid of this difficulty, it is suggested that the notice in all cases should be served on the governor of the state.

Section 23, Page 40, Lines 9-11.—These lines confine the notes that may be made without antecedent permission, to five per cent of the par value of the securities of the carrier then outstanding. This limitation, by many of our most important people, is considered too small and would seriously embarrass financing by short-term notes.

Section 23, Page 40, Lines 24-25.—These lines make the issue of securities contrary to the provisions of the section void. Inasmuch as the failure to comply with the section may be technical, and the taker of the securities would have no power to ascertain whether all the provisions of the statute had been complied with, it is suggested that it would greatly interfere with the taking of railroad securities if the investor may find that he, perfectly innocently, is in possession of a void security. We suggest that this provision be eliminated, and that the enforcement of compliance with the act be provided for by penalties against the officers who knowingly violate the requirements of law.

Section 23, Page 41, Line 20.—The provisions here referred to make it unlawful for any person to hold the position of officer or director with more than one company without the authority of the commission. We do not think that this should apply where one of the carriers is a substantial stockholder in another carrier, and we believe that after the word "unlawful," in line 20, the following should be inserted: "except in cases where one company owns a stock interest in the other company of not less than 25 per cent." A stock interest of 25 per cent or more ought certainly to entitle a company to be represented on the board of directors of another company by one of its officers or directors.

Section 25.—The duty of the Committee of Wages and Working Conditions to consider complaints should be confined here, as it is in the first few lines of the section, to unadjusted controversies; and the complaints should be made to relate only to issues between the carrier and the employees interested in the special controversy. Matters of general management of the company should be left to the board of directors, and should not be made a matter, on complaint of

employees, to be settled by the Committee of Wages and Working Conditions. We, therefore, suggest that after the word "complaints" in line 23 there be inserted, "as to controversies not adjusted between the parties as to wages, hours or service, working conditions, or other matters in which the complainant has a direct interest"; and before the word "employees," there be inserted the words "the interested."

Section 31.—Would it not be wise to extend the terms of the members of the Interstate Commerce Commission, as well as to increase their compensation?

Section 32.—We assume that it is incompetent for Congress to require a company to extend its line beyond what it is required to do by its charter. To do so would be to commit the stockholders to an undertaking which they did not contemplate in their contract of subscription, and would be taking their property without due process of law. We think, therefore, the words "to extend its line or lines" in lines 13 and 14, on page 56, should be eliminated, or should be so modified as to require such extension only in cases where extension is necessary to comply with the charter obligations of the company.

Section 35.—Without undertaking at this time to re-argue the question of a rigid long-and-short-haul clause, attention is called to the elaborate hearings before this committee in which it was shown that great injury would be done to commerce if the clause were made rigid, and we suggest the reconsideration of this provision.

Section 35.—By this provision it is made impossible to increase rates which have been reduced in competition with a water route unless the commission shall find that such proposed increase rests upon changed conditions other than the elimination of water competition. It is manifest that the public interest might require the increase of these rates for other reasons, such, for example, as to bear their proportionate part of the transportation burden; and, therefore, we suggest that after the word "competition," in line 2, the following words shall be added after a comma, "or shall be required by the public interest."

Section 33.—We submit that in this same connection agreements as to rates and practices between carriers should, if approved by the commission, be made lawful.

Section 43.—It is impossible under the present law for a carrier to complain to the Interstate Commerce Commission of a state rate. This has proved a great obstacle in securing relief under the doctrine of the Shreveport case. We would therefore, suggest that in line 19, on page 66, after the word "act," the following words be inserted, "either upon the complaint of any carrier or other person interested, or upon the initiative of the commission itself."

Section 43.—We suggest that in line 16, on page 67, after the word "unreasonable" there should be inserted the word "inequality"; in line 17, after the word "localities" there should be inserted "commodities or other traffic"; and in line 2, page 68, before the word "advantage" there should be inserted the word "inequality." The purpose is to bring under the jurisdiction of the commission, not only the question of discrimination, but also the question of inequality of the burden, between state and interstate traffic, as to maintaining the instrument of interstate commerce which both are using.

Section 44.—We are convinced that 60 days is long enough to deprive a carrier of rates which are subsequently declared to be reasonable, for a carrier cannot be compensated for the loss of reasonable rates during this period, whereas it is possible to compensate a shipper for an overcharge. Consequently we urge upon Congress to make the period of suspension not longer than 60 days, with a provision to take care of shippers in the event of overcharge. Accordingly, in lines 12 and 13, on page 72, we think that "60" should be inserted instead of "120," and, in any event, we urge that there should not be a right of suspension, as contemplated by lines 21 and 22, for an additional period of 30 days.

The National Association of Owners of Railroad Securities has also filed a number of suggestions for changes in the bill.

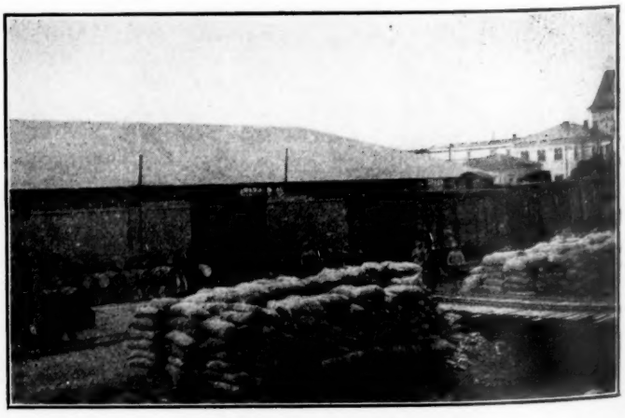
Lenroot Criticises Cummins and Sims Bills

THE SIMS BILL, which incorporates the Plumb Plan, should be denominated "a bill to further increase the cost of living," according to Senator Lenroot of Wisconsin in a statement made public by the Citizens' National Railroads League. Senator Lenroot also criticises the Cummins bill as impractical and harmful in its provisions to security owners. He asserts that the bill might be denominated a bill to shelve temporarily, but to further increase the troubles of the railroads.

"One of the absolutely essential provisions in any legislation calculated to solve the railroad problem permanently must be encouragement of efficiency in operation," the statement continues. "In my opinion, the Cummins bill fails to do this. The Cummins plan is to have the government take away everything in excess of what the ratemaking authority determines is a fair return, and thus there is no incentive to efficiency after a fair return is made.

"Moreover, the Cummins bill provides that 50 per cent of the excess is to be used for the benefit of employees. Only a small part, if any, of this will be paid to employees and they would not, under such an arrangement, have the same incentive as if their share was paid directly to them.

The statement asserts that necessary and essential credit cannot be secured by the roads unless there is a government guarantee, with reasonable rates. Congress never will consent to a guarantee while the management remains in the control of the old form of management. Therefore a government guarantee of income cannot and should not be added to the Cummins bill, but, without it, I do not believe that the bill can solve the problem or save the railroad business from disaster. The bill I have introduced does not purport to take care of the immediate situation, but offers a permanent solution which would take some time to put in full operation. Our bill is supplemental in a way to the Esch-Pomerene measure. I believe that the roads should be turned back to their owners under government aid, for two or three years until a plan like the one embodied in my bill can be made operative. Something must be done to keep the roads from bankruptcy until we can finally dispose of the problem."



Food Supplies for Roumania

Master Car and Locomotive Painters' Convention

Chemical Tests of Paint and Varnish Not Satisfactory; Substitutes for Linseed Oil Discussed

THE FORTY-EIGHTH CONVENTION of the Master Car & Locomotive Painters' Association was held at the Hotel La Salle, Chicago, September 9-11. The first session was opened with prayer following which an address of welcome was delivered by a representative of the Chicago Association of Commerce. J. F. Gearhart, president of the association, then delivered an address in which he reviewed the organization's activities during the past three years and outlined the proposed amalgamation with the American Railroad Association. The convention then proceeded to a consideration of the topics selected for discussion. Abstracts of the principal papers are given below.

The Selection and Purchase of Paint

By S. E. Breese
Foreman Painter, New York Central, Collinwood, O.

Previous to the advent of the United States Railroad Administration the master painter of the railroad was the sole authority as regards paint and varnish both as to materials used and methods of application, and was responsible to his immediate superior for the results obtained. By virtue of this authority and through his experience and ability he secured certain desired results acceptable to the road which employed him. He accepted full responsibility as to results obtained and viewed with pride the results of his work. This pride was justified by the condition and appearance of the equipment coming under his jurisdiction. By an interchange of ideas, the foreman painter was constantly striving for progressive methods, economy, labor saving systems and durability in his work. He chose his tools, his men and his materials and through the proper co-ordination of all three secured results. The questions which I believe are of paramount importance are, whether the above conditions still exist and whether we are still responsible for results and have authority as to what tools to use, methods to employ, or materials to apply.

At the present time the purchasing department chooses and gives us our tools and material and asks for results. Are we allowing our responsibility to be shifted, our authority to be questioned and our methods attacked and submitting to it all without a protest? We were employed for a specific purpose, namely, to maintain equipment in good shape, secure economy as to methods, costs and time factors and yet are unable to choose our methods or materials. If this has come about what is the cause and what is the remedy?

Master Painters Should Choose Materials

A successful organization is one in which the authority vested in each department is absolute and co-ordinated and results are obtained only by a complete assumption of responsibility by the head of each department. In this way a chain of organization is forged, which is strong, well co-ordinated and successful only when each department has this full authority. Are we allowing our department to become the weak link of the railroad shop organization by a question of divided authority or a shifting of responsibility? It is essential that we become cognizant of the real danger of shifting our responsibility, accepting divided authority and lowering our standard methods and materials.

I believe the greatest trouble has been with material rather than with methods of application. This is primarily in the hands of the purchasing department and there has been some little friction over the materials bought for use. Due to the very nature of each department's position, there must necessarily be some friction, as the office of the purchasing department is the securing of materials designed to accomplish certain specified purposes at as cheap a price as possible with due regard for the quality and durability of the articles purchased. The purchasing department must, because of its lack of knowledge concerning the materials used, be absolutely dependent as to the question of durability and quality on information secured from the mechanical department, which in turn secures this information by co-operation with the master painter. This information is obtained by a consideration of a number of essential points including practical equipment tests and weather tests, chemical tests, information secured through the sales representatives of paint and varnish concerns, regarding the tests made by them of the material in question, and the knowledge and experience of the master painter due to his specialization on varnish and paint problems.

Chemical Testing of Paint

The chemical testing of varnish or paint materials has up to date been of little value as a reliable source of information, especially as regards durability. In fact, up to date, except in the case of raw materials, a chemical test is of no use to the painting department. The experienced painter by a few practical tests, such as elasticity, working and drying, can usually determine and foretell through his experience the possible durability of the article in question. General Atterbury has stated "In my experience the only materials which we were unable to purchase by specification were paint, varnish and rubber. In the purchase of the above materials, I was absolutely dependent for information on the man in closest touch with the materials, who by his specialization and experience usually could be called upon to adopt the material best suited for the purpose." This statement still holds true.

The purchasing department backed in many cases by the arguments advanced by sales representatives have succeeded in selling the mechanical department materials against the judgment of the master painter, who accepts these materials rather than get into a controversy. This has brought about changes in materials and standards all tending towards less efficiency and lessened durability, which means higher cost of maintenance in the end. This false economy is now being felt by the equipment upon which it was used. Goods of every description and standards are pouring into the shop; changes are being made from month to month on nearly all materials. Our only duty seems to be to apply them.

Inferior Material Now Being Used

As the price of raw materials advances, the price of paint and varnish declines, a queer economic anomaly which is only explained by a reduction in quality. The purchasing department notwithstanding the above, continues to buy at still lower prices, without consideration of durability or the standards of the road. This is a direct infringement on the authority of the man who, by his experience and specialization, has been placed in the position of the final judge of paint efficiency and durability. It is part of our job to make decisions regarding durability and efficiency. We have all

seen certain materials installed as a standard for painting, whose false economy, is now becoming apparent, and which was apparent to us in the beginning. What is the remedy of this situation? A sales representative told me that any justifiable complaint made to the person in direct charge was always seriously considered by the purchasing department in placing orders, but as the complaints are not made, the purchasing department establishes a precedent for the purchase of still cheaper material. Have we been afraid to complain, have we refused to use materials for the purpose intended? The refusal of these materials would also establish a precedent for the discontinuance of the purchase of such materials. Let us not close our eyes to apparent faults without attempting by honest argument and frank discussion to remedy the situation. Let us carry this to a successful conclusion and put our association back of the fight for efficiency, economy, and durability of all forms of painting equipment, and retain full and undivided authority as to methods employed and standards adopted.

Discussion

The members as a whole agreed that much poor material was submitted and accepted where paint was bought on specifications only. Several stated that material received under present specifications was not satisfactory. Although experience indicated that the paint would not give good service, it met the tests prescribed and for that reason there was no alternative but to accept it. J. W. Gibbons (A. T. & S. F.) emphasized the fact that the efficiency of painting should be judged not by the number of cars painted for a given expenditure, nor the speed with which the work was completed, but rather by the length of the intervals between painting.

Substitute for Linseed Oil

By A. H. F. Phillips
Master Painter, New York, Ontario & Western, Middletown, N. Y.

There have been great demands for linseed oil, and some specialists predict that the call for seed to fill the large contracts will become so urgent that higher prices will eventually be realized. If such is the case, it will mean almost a prohibitive price for use in a railway paint shop. We can safely say that the demand is great and persistent. There has been a general shortage in flax seed, which still continues. The Canadian and American supply continues light, and Argentine conditions are not changed particularly. Prices and freight are high, and cargo space at a premium. American buyers have been credited with considerable stocks in warehouses but receipts and available supplies are somewhat limited.

Under the present conditions of the market, the demand for linseed oil is in excess of the supply, and there is no question that there is a genuine shortage of oil. Perhaps, at some future time when the market becomes more normal the supply may possibly equal the demand and prices may not be so high as to almost prohibit its use as a paint making oil.

Properties of Vegetable Paint Oils

For some time past the railway paint shops have been receiving many paint oils as substitutes for linseed oil. I believe there is none, as yet, equal to linseed oil as paint making oil. A paint oil as a substitute for linseed oil for use in the railway paint shop can be made, and is being made and sold by many companies, on a linseed oil base, and of the same gravity. This dries with a good gloss, as it contains enough of volatile oils as conveyers to assist materially in the application of the paint and when evaporated in drying, leaves a thoroughly elastic and highly protective oil film in combination with the pigment. This paint oil can be used in thinning out paints of any character, oxide, carbon, lead or zinc, where oil is desired as a thinner without danger of any chemical action. Such oil would probably be called a combination oil. I am not prepared to assert what oils make up such a paint oil.

Vegetable oils are used by many in making up their paint oils, namely, cotton seed oil, soya bean oil, hempseed oil, corn oil, peanut oil, cocoanut oil, etc. These vegetable oils being largely food oils and used extensively in paint making oils as substitutes for linseed have found an increasing market. Mineral oils are also used in the paint oils to some extent, but I do not think it advisable to be too free in the use of paraffin oils. Owing to the great demands for linseed oil and the scarcity of the supply, also prices soaring up almost to a prohibitive figure for general use in the paint shop, substitute oils have found a place in making paint oils for use in the railway paint shop.

Oils Other Than Linseed Used in Paint

There are quite a number of these, drying, semi-drying and non-drying and not a few have their special uses in paint. The most important of the drying variety is China wood oil or tung oil. Poppyseed oil is prominent for grinding the finer grades of zinc white and artists' colors, and must be classed among the drying paint oils for the reason that when pressed from ripe seed it dries very nearly as rapidly as raw linseed oil. The reason for the use of poppyseed in colors or paints is due to the non-darkening of this oil and its free spreading. Bombay nut oil was at one time largely offered at a price somewhat lower than poppyseed oil. It was very clear, almost water white, and its drying property fully equal to that of bleached linseed oil. However, this oil has not been heard from in the market for some time.

Sunflower seed oil is also classed among the drying oils, but it has not found its way into general commerce and therefore nothing more is known about it than has been ascertained in an experimental way. Hempseed oil also belongs to the class of vegetable drying oils, but this seed being raised principally in Russia and a few other localities in Europe, is used mostly there as a paint oil; and if any is brought to this country it comes as an admixture with linseed oil.

Another vegetable drying oil that has been largely imported for some time into this country and Europe, under the name of candle nut oil by soapmakers and known to science as Kukui oil, is now being tested by progressive varnish and paint manufacturers. It bids fair to be a strong competitor of linseed oil when its characteristics become better known to the trade and it is prepared in a more scientific manner than it is now. Other drying vegetable oils, as nigerseed oil, tobacco seed oil, Scotch firseed oil, etc., that are not readily obtainable in commerce, are not at all interesting to the paint maker and color grinder.

Fish Oil Has Limited Use

Another oil, which is of animal origin, is the fish oil known as Menhaden oil. This is barred out, however, from use in many paint materials, especially in interior paints, because of its offensive odor, and is made use of only in special outside paints as in roof paints and stack paints, and by some manufacturers in other specialities.

Among the substitutes for linseed oil that interest paint manufacturers most should be classed soya bean oil, corn oil, and cottonseed oil. Soya bean oil requires fully ten days to dry to a film and then the film will not be as firm as raw linseed oil which requires six days to dry to a film. Since linseed oil is extraordinarily high priced there is quite a demand for bean oil and it is quite a task for paint makers to

discover methods to make their products dry in the ordinary way. The usual practice was to use equal portions of soya bean oil and boiled linseed oil, or when this would not work out well in some paints the bean oil portion was increased and also the driers.

Corn or maize oil has been in use in paints for many years, but is made use of only when the linseed oil is high in price. This oil has very little, if any, drying properties, and will harden to a brittle, rather mealy film in from twenty to thirty days. Cottonseed oil has no drying properties, but is a good lubricant, and previous to its rise in price when it came to be used as a cooking and table oil, it was used to adulterate linseed oil. Rosin oils are not only used in printing-ink making, but were largely employed in making paint for rough surfaces, though since their price has advanced to twice, even three times their former cost, they have been replaced by mineral paint oils to a great extent in paint. Rosin oils are practically non-drying, and while they harden in time will soften again under the influence of sun heat and make the paint film part, or alligator. Pine oil and tar oil are products from the distillation of wood spirit and of rosin, and are used in the manufacture of marine paints, especially paints for ships bottoms. These oils are semi-drying and water resisting to a degree.

Mineral Oil Will Not Resist Moisture

Mineral paint or paint and putty oil, so called among the trade, is refined petroleum or neutral oil, so named because debloomed. These oils cannot be used without being mixed in certain percentages with boiled linseed oil, as they lack binder and are apt to wash off the surface in case of driving rains. Even when used in large portions in a liquid paint for rough surfaces such paints have been known to wash off when they were supposed to have dried hard a month or two before.

Petroleum products of this class will sweat, causing softening of the film and consequent damage by water.

Cheap paints for use on rough lumber or other rough surfaces can be made by grinding the base in linseed oil (usually boiled) thinning with a mixture of about 35 gallons of gloss oil (rosin and benzine mixture), 10 gallons of raw linseed oil and 5 gallons of liquid drier. Or if it must be still cheaper, a thinner can be made of 30 gallons of gloss oil, 15 gallons of debloomed neutral paraffin oil and 5 gallons of lead and manganese drier. In any case, however, the pigment to be used as the base for the paint should be ground in linseed oil.

So far linseed oil has not found an equal in paint making, although the subject has been one of deep study, and while other fixed oils have been discovered that for certain purposes have been expected to take its place, it has yet to be demonstrated that such is really the case in long practice. China wood or tung oil, while superior to linseed oil in certain directions, especially in its resisting power to water, has not shown itself adapted to replace linseed oil in making oil paints as we know and desire them.

When linseed oil is placed on a strip of glass that has been painted jet black and shows a bloom, or iridescence, it is adulterated with mineral oil or rosin oil. Admixtures of linseed oil and corn oil or linseed oil and cottonseed oil can be detected by placing some of the oil between the palms of the hands, rubbing briskly and noting the odor thus emitted. The presence of soya bean oil, however, cannot well be ascertained by simple tests, and a chemical analysis is necessary though even that is sometimes misleading.

Discussion

Papers on this subject were also presented by P. J. Hoffman, (H. V.) and F. B. Davenport, (Penn. Lines). Mr. Hoffman brought out the fact that substitutes for linseed oil are suitable for certain purposes only. While it is desirable to make use of these oils, the stocks would be increased due to the limited field of application of the substitute and this would result in increased expense.

J. W. Gibbons (A. T. & S. F.) stated that mineral oil should not be used with putty as it evaporates and leaves a powder that soon flakes off affording no protection for the glass. Good putty effects a saving of glass and labor many times greater than the increased cost of the material. Mr. Gibbons stated that linseed oil is not necessary in paint that is not exposed to the weather.

What Standardization of Painting Railway Equipment Is Necessary

By W. O. Quest

Master Car and Locomotive Painter, Pittsburgh & Lake Erie, McKee's Rocks, Pa.

At the present hour, the most necessary and essential paint shop standardization would be some practical method of satisfying labor on the matter of wages in the painting of equipment. Will it be possible to standardize the labor operations of the railway car paint shops now under government control? As something of an optimist, strong in the faith that the American workman will soon realize that to bring order out of a threatened social upheaval, he must turn back to the old-time ideas of soberness and thrift, I do believe that it can be, will be, and must be done. But how such desired standardization is to be brought about, is open for the suggestive powers of just such an assembly as this. I believe that it can be happily brought about, if an amicable live and let live arrangement is made in the spirit of fair dealing between the railway employers and employees.

Piece Work System Advocated

The labor of painting cars and locomotives, etc., could be standardized by the adoption of a universal piece price system, the wage paying system that we firmly believe in as the most equitable to employ any kind of labor, the most equitable for all interests, notwithstanding the facts that modern labor federations in recent years have been instrumental in entirely abolishing this method of employing labor in the American railway shop systems. In my opinion, a fair scheduled piece price system is the only method whereby labor can give a fair equivalent for wages paid. Such proposed piece price schedule, to be standardized, should be job named and not numbered. The unit or fixed prices should be open to shop inspection at all times and never officially juggled in the event of the more skilled labor earning more pay when called upon to help out in a shop rushed for output. If a piece price labor standardization can be put into action, the prices should be so scheduled that the earnings of a first class skilled worker in a railway car paint shop would equal the earning rate of the outside general trade skilled worker. The original schedule of prices should be carefully figured out and classified, each job continuously named regardless of name repetition in the several classifications. The original job prices as scheduled should never be price changed, as we have found it to be no easy matter for the men to follow up such changes and it was sure to create dissatisfaction. When found necessary to advance or lower the wage scale, an up and down percentage method should be used.

Standardization of Materials

Next to the labor problem, the most important issue would be that of specifying the standardization of paint supplies, as there cannot be any fixed material standardization without manufacturing, purchasing, chemical and application specifications. The paint and varnish maker will be called upon

to furnish certain standards of car shop specialty material on fixed paint making formulas, that must be lived up to. Something represented as just as good or better at a lower price, unless first tested by some prescribed authority, cannot be consistently introduced without upsetting the primary law that demands standardized materials. Possibly in many instances this material is theoretically or authoritatively formulated from raw paint stock listed on the open market, which is often unsuitable or perhaps ruinously mixed by people who are trying to meet competition in the paint business, but do not materially know the special requirements of the railway paint shop.

There are no suggestions that will safely promote a material standardization in the railway paint shop, if the purchasing departments continue to buy paint stock on price regardless of known quality or the paint-making reputation of the selling concerns. Companies have in the past and still will in the future break into the railway paint field, without knowing that such paint is a specialty and is especially applied.

If any such suggested railway paint standardization ever becomes a law, the activities of the railway chemical laboratories will be quite strenuous and especially active when they come to the matter of settling the many disputes sure to arise.

Method of Application Important

It is in the application of the paint stock that the master car painter must receive his full recognition. He will have to be put on the standardizing committees with full power to act, as he and he only knows what is necessary to make a good job. If what is termed necessary standardization of certain or all classes of job paint work is adopted, he will as usual be held responsible for the labor and material costs.

I will here offer a list of work items that in my opinion could be readily standardized, if it is found necessary to try the standardization scheme out. If adaptable, locomotive painting should be standardized. The quality of the protective paint and varnish should be the best weather, smoke, acid, or grease resisting paint stock that can be found on the market at any price. Every inch of the painted metal surface should be sandblast cleaned. All castings to be painted should be chipped off smooth and freed of live rust, etc., with the sandblast, as it is a sure waste of time and money to paint over crusted unremoved grease, mill flash, or live rust of any kind. If the work is standardized, the paint specifications demand should call for hard, tough, elastic paint stock, as it is a great mistake to apply soft oil paint where it is to come in direct contact with solvent cutting greases and acids, which when deposited on the locomotive's painted surface, can only be removed by heavy erosive cleaning.

The painting of passenger, mail, baggage and similar cars could be classified as to labor and material. Owing to the sameness of the work the jobs could be readily standardized. When material classifications are being standardized, the many examples of the best paint and varnishing finishing systems which have been successfully used for many years in the railway paint shop should not be forgotten in the standardization arrangements, and the interests of worthy manufacturers should be protected owing to the fact that their specialty products have helped to make car painting history.

Uniform Stenciling for Freight Cars

Based on the past work of this association's efforts to establish standards in freight car painting, especially to standardize the stencil markings, which undoubtedly has been and still is one of the most pronounced wasters of time, labor and material that the railway officials are confronted with, we heartily endorse the idea of standardizing every detail that covers the painting and stencil marking of the railway freight car. In the standardization scheme, the stencil lettering and numbering should be made in the same style and sizes and sent out from a designated manufacturing base in pounce pattern form. If made by skilled stencil makers from established drawings, the stenciled railway freight car would present a neat lettered appearance. The paint repair costs of the future would be light, owing to the undisputed fact that such a railway freight car stenciling standardization scheme would save thousands of dollars in stencil-making costs for every railway company that will endorse and adopt such standardization.

Discussion

W. A. Buchanan (D. L. & W.) also presented a paper on this subject in which he outlined the methods of painting which he considered best for locomotives and freight cars. He advocated standardization of stenciling on freight cars as a means of reducing the cost of painting.

H. M. Butts (N. Y. C.) proposed that the association issue a pamphlet of approved practices for painting railway equipment. There was some difference of opinion regarding the relative merit of carbon and lead paint. J. W. Gibbons (A. T. & S. F.) stated that for steel underframes he considered red lead and carbon black better than two coats of carbon black. W. A. Buchanan told of steel freight cars painted with carbon paint which were in good condition after 17 years' service.

The Advantage of Using Pure Paints and More Time in Painting Steel Equipment

By W. Bailey
Boston & Maine, Concord, N. H.

Paint should be applied to freight cars with a brush and with as much care as on any other surface. Any well known pigment mixed with linseed oil is the only commercial article worthy of the name of pure paint. Unsatisfactory painting can easily be traced to the use of poor paint and unskilled painting, such as the spraying process.

Most of the commercial paint used today is a poor article compared with good linseed oil paint. Paint mixed with japan and a thinner when applied dries by evaporation and is consequently non-elastic and almost worthless for durability. On the other hand a paint the vehicle of which is linseed oil, dries by the absorption of oxygen and is much thicker when dry due to the amount of oxygen taken up in drying. It is elastic a long time and will resist atmospheric exposures longer than any other vehicle and consequently wear longer than any paint mixed with driers and thinners. Japan, or thinners, should not be used in any paint for outside surfaces and exposure. Nothing but boiled linseed oil should be used for a drier. I am a firm believer in the necessity of the sand-blast process for removing rust and scale, as the smoother the surface the longer the paint will wear.

One thing I am in doubt about and that is, what is the best primer for steel: is lampblack, graphite, white or red lead? I do not believe a paint containing a large percentage of oxide of iron should be used as a primer.

Painting Should Not Be Rushed

A new car should have at least three coats of paint and ten days' time for painting, if one wants an economical job of painting. When cars are turned out with two coats of commercial paint in a few months 10 to 50 per cent of the surface is a mass of rust and scale. The car is seldom returned to the shops except for repairs and then the same process is repeated. This is expensive. On the other hand if a good, economical job is desired, the car should be given a coat of lead primer and finished with two coats of paint.

If freight equipment could be shopped as regularly as passenger cars, and I think it just as essential, it would be a great saving to the railroads. As it is they are seldom sent to the shop until something needs repairs, and then the rush comes when in the hands of the painter. Passenger cars are shopped every year, principally for appearance sake, and if freight equipment could be shopped as regularly for protection it would be a great saving.

I think it is a right a painter owes to his own reputation as well as a duty he owes to his company, to say all the good things he can of good paint and condemn poor paints. To get good paint you must mix it yourself. Twenty years ago mineral was used without grinding and gave better results than the present commercial prepared paints. Mineral, lampblack and graphite can all be used without grinding. Too much cannot be said in favor of linseed oil as a vehicle for paint. It is one of the few vegetable, fatty oils that dries by absorption of oxygen.

To conclude, it should be said that whenever railroads will take time enough to paint steel equipment with the right materials, and in a way that it should be done, then the work will stand, and in the long run economy will be the sure result. The steel coal cars one sees on every hand today are horrible examples of the poor judgment and haste that has been practiced in the painting of this equipment where it has been turned out of the car manufactories. There is no cure for it now but to sand-blast it off and paint it as it should be with right materials and practices. A stitch in time would have saved nine when the cars were built but the nine stitches should be taken now to save the equipment before it rusts out completely, for there is nothing that deteriorates faster than steel unprotected with a suitable coating.

Other Papers

F. B. Davenport (Penn. Lines) told of the results secured with a special heat resisting paint developed for use on car roofs. The best quality and size of sand for sand blasting was discussed in papers by J. W. Gibbons (A. T. & S. F.) and G. M. Oates (Pressed Steel Car Company). Methods of preserving the roofs on passenger cars were described by J. J. McNamara (B. & O.) and H. H. Morgan (C. of Ga.). C. E. Copp (B. & M.) presented a paper on the record of the Master Painters' Association.

General Business

The proposal to amalgamate with the American Railroad Association as a division of the Mechanical Section had been considered by the officers and was brought up at the convention. After considerable discussion, it was unanimously voted to become a part of the new organization and rules of order were adopted. The secretary-treasurer reported a total membership of 328 and a satisfactory balance in the treasury.

The following officers were elected, chairman, J. W. Gibbons, (A. T. & S. F.); first vice-chairman, E. L. Younger, (Mo. Pac.); second vice-chairman, J. G. Keil, (N. Y. C.); secretary-treasurer, A. P. Dane, (B. & M.).

Boston was chosen as the place of the next meeting, which will mark the fiftieth anniversary of the founding of the association.

Prosecutions for violation of the federal safety laws, begun in the United States District Court at Pittsburgh, Pa., on September 5, name officers of the railroad (instead of the company itself or the Railroad Adminisration) as defendants. The offense was the working of train men more than 16 hours on the Pittsburgh, Cincinnati, Chicago & St. Louis. Six men were named: R. E. McCarty, general manager; I. W. Geer, general superintendent; J. C. McCullough, superintendent, and three others.

Labor Leaders Object to Anti-Strike Legislation

A STATEMENT issued by the Plumb Plan League, signed by the executives of fourteen railroad labor organizations, but not by Samuel Gompers as honorary president, criticises the provisions of the Cummins bill designed to prevent strikes, on the ground that "the right to strike as the last resort is ingrained in the nature of the American workingman." "To attempt to put such a prohibitive law into operation," the statement declares, "would be madness. No leadership in the world could restrain the rank and file of American labor under such an imposition; the human factors called forth would be beyond control."

"This provision," the statement says, "not only would make it illegal to strike with *intent* to hinder interstate commerce, but also would make it illegal to enter into any combination or agreement which *does* hinder interstate commerce. Intent would not have to be proved in the courts. Thus the provision is iron-clad; for any strike on the railroads, of however small proportions, would unquestionably hinder interstate commerce. The provision is carefully written to remove from railway labor the right to strike under any possible circumstances. If this provision were enacted into law, it would impose upon railway labor two insupportable conditions, namely, compulsory arbitration and economic servitude. Such a serious and fundamental proposal opens up the whole question of the relations of labor to the state and to the employer, and precipitates every issue in the industrial situation. To advance it in Congress at this time, in the face of an economic crisis, and when Congress is refusing the legitimate requests of railway labor for a full consideration of its own proposals, is a step calculated only further to increase the difficulties that confront the nation.

"What would be left a workingman, under the provisions of the Cummins bill, above quoted? The final clause of the provision is an empty promise. If two or more men quit work under any excuse, it could be held that they were interfering with interstate commerce. The provision simply means that under it men in the railroad employ would no longer be free to quit their jobs; they would work in economic serfdom, subject to the conditions imposed by the adjustment boards; or, if two or more of them did quit, they would be criminals, and the police and the troops, the courts and the jails, can be used against them.

"A law such as this would spell the end of labor organizations in America. Is this the intent of the provision? Does Congress, at the behest of the alarmed business system, propose to try to break up the organizations of labor throughout the country? Is it decided that the time has come to make this final fight? These are questions which demand an answer. Every workingman in the land is asking them as he reads the newspapers. In his heart he knows that to enact this law would spell more than the death of trade unionism. It would spell the birth of revolution.

"This is not a threat, but merely a statement of obvious fact. The real threat comes from the other side—against labor, to remove from its hands the only weapon by means of which it has built up and maintained its organizations, and against the public, to throw the country into a state of confusion and violence. Labor alone, in this railroad crisis, has been thinking of the public; it is only labor's plan which holds the public interest to be primary. All other plans and proposals have been dictated by selfish motives. This final proposal is cynically disregardful of the public welfare.

"As representatives of the fourteen organizations comprising the organized railway employees of America, we beg Congress most earnestly to consider this situation on the basis of its true values."

Railway Business Association on the Cummins Bill

Suggestions for Making the Object Which the Bill Admirably States Effective in Actual Practice in the Future

ALBA B. JOHNSON, president of the Railway Business Association, has written Senator Cummins a letter in part as follows:

Vital as are the subjoined recommendations for amendments to Senate Bill 2906, I felt constrained to telegraph you on Friday and now reiterate congratulations on the progress toward a solution of the railroad problem which this measure embodies. It has a merit which distinguishes it sharply from most of the other "plans" which are being urged—it is not a stockholders' bill or an employees' bill or a railway supply men's bill, but a bill for the users of transportation.

To you personally it cannot be otherwise than an occasion for gratification and pride that after three years of inquiry and interchange of ideas upon the major stumbling block involved in your question "What shall we do with the weak roads?" this is on its way to an answer through your proposal of consolidation; and your confidence rests not alone upon the apparent willingness of Congress to give your plan the sanction of law but also upon the apparent readiness of railway owners and managers to carry through without compulsion a large part if not all of the program. Once measurably rid of the strong-and-weak-road dilemma you will have just reason to hope for a clear way to a disposition of the revenue and credit aspects.

Objects rather than means concern the industries for which I speak. With all the most important of these objects the sub-committee bill deals.

Good Tendency of Mere Proclamation

In our judgment the mere proclamation of these objects as indicating the purpose and policy of the government would strongly tend to bring into line with such declaration the practice of the administrative branches and substantially increase the confidence of those whose capital is needed for better railroads and more railroads.

Neither Congress nor the country, however, we feel sure, will be content merely to adopt declarations the results of which are expected to come through the sentimental influence of the declarations themselves upon the regulatory agencies. Congress and the country are ready for legislation which will put restoration of railway development beyond a peradventure if a statute can do it. The present juncture affords a rare opportunity, which may never be presented again, for a legislative achievement that will take transportation out of politics and out of controversy.

We offer you our friendly co-operation in your difficult task of appraising this tentative bill and strengthening it where needed.

We are convinced that in the bill as it stands the provisions for making policy effective are in need of modification.

Why Not "Shall"?

The bill does not prescribe that revenue shall be adequate for the objects which it names. It says that those objects shall be "taken into consideration."

In the Interstate Commerce Act as it stands Congress, desiring to enunciate the purpose that rates should be reasonable, did not say that in regulating rates the commission shall take into consideration their reasonableness; it said that rates "shall" be reasonable.

A new element of policy is now to be introduced. It is the purpose of Congress that rates and the revenue to be yielded by rates shall be adequate (for objects specified). What reason is there for evading the straight phrase of the earlier enactment?

We believe the accomplishment of your purpose requires that you say, not that the objects specified shall be taken into consideration, but that revenue shall be adequate for those objects.

Delusion About a "Fair Return"

We have urged that income should be made adequate to afford the basis for credit.

This is included in the bill as one of the objects which are to be taken into consideration in determining the revenue needs; but there is in the bill as bearing on this point phraseology which we fear will return to plague you. The enumeration of things to be considered embraces this language: "a fair return upon the value of the property," "requirements for additional capital," and "the conditions under which the same may be secured."

Is it intended by these words to indicate that a fair return and conditions upon which additional capital may be secured are two distinct things? It would be dangerous to give even an impression that Congress had sanctioned that fallacy, because it has taken a firm hold on a large part of the public mind. People's eyes are focused upon the holder of existing securities as such and the return which he is to have. They use the tell-tale word "entitled"—to what return the security holder is "entitled"—and they imagine that it is somehow the business of the legislative branch or of the Commission through which it applies its policy to determine what the security holder is "entitled" to and to see that he gets this and nothing more.

Your success or failure in dislodging this delusion from the public thought may determine whether we in America can or cannot preserve individual initiative in transportation and hence probably the institution of individual possession in every field. The legislation upon which you are engaged can be made a potent vehicle for the enunciation of the actual facts.

Basic Propositions

Some elemental propositions which could advantageously be made clear by what your statute says and by what it omits would be these:

(a) Protection to the stock or bond owner is not the business of Congress at all but of an entirely different and independent branch of the government—the judiciary.

(b) A "fair return" to which the owner is "entitled" is and can be nothing else but the return below which a Commission cannot constitutionally depress rates.

(c) The concern of Congress is not primarily with the holder of existing securities but with the possessor of savings whose future investment is desired, who will buy or refuse to buy solely in accord with his expectation of a return and whose mind is made up as to future returns by past and current returns upon existing securities.

(d) Congress, being charged with the duty of assuring adequate facilities to the public, is therefore concerned solely with the question what return upon existing securities will make a market for new securities. Congress operates in the

zone of income above what the courts would enforce as a "fair" return.

I have above referred to Senate Bill 2906 as a measure distinctively for the users of transportation. This impression will be strengthened if having said that revenue shall be adequate the bill states the credit problem by eliminating altogether the word "fair" and simply authorizing a return designed to attract what the bill already defines—"additional capital in order to enable the carriers to adequately perform their duties to the public."

We have urged that the certificate of the Transportation Board as to necessary revenue be met by the rates. The bill does not so prescribe. It merely provides that in any hearing before it the Interstate Commerce Commission shall accept the certificate as prima facie evidence. This in our judgment would be a mistake pregnant with the most serious consequences.

The certificate or certificates (to quote the language of the measure) are to be "prima facie evidence in any hearing upon the matter or matters to which such certificate or certificates respectively relate."

The commission can for reasons satisfactory to itself reject even a certificate having the statutory sanctity of being prima facie evidence.

The commission, then, is to pass upon the judgment of the board after a proceeding. The board presumably is to come before the commission as a petitioner. The members of the board through such procedure are to ascertain whether the Interstate Commerce Commission regards their judgment as sound on matters of business; and in all the praise which citizens, including your present memorialist, have justly bestowed on the commission we have never heard or seen it suggested that that body is specially qualified for the business function of estimating future needs and their cost and of exercising courage in making provision in advance.

Will Competent Men Accept?

Obviously if the Board is to have the duty of ascertaining the transportation needs of the country and the amount of revenue required, men of business capacity and experience will be desired and if possible will be obtained for service upon it.

Have you any confidence that men of that caliber will accept or long retain office in the board if in matters of business their judgment is to be reviewed by such a body as the Interstate Commerce Commission?

In testimony presented before the House committee August 25 and 26, of which a condensed print is herewith attached, I endeavored to maintain that to give the commission a voice in deciding the amount of revenue will destroy its incalculable value as an agency for abatement of discriminations and that even if Congress were willing to sacrifice the commission as an instrumentality for the prevention of injustices, the transformation of it into a body of men of action would take years and probably the protracted process would be interrupted by government ownership.

Some members of your committee are business men. They appoint subordinates with defined jurisdiction. Within such jurisdiction the subordinate is supreme. His position resembles what used to be said of the Russian throne—it was despotism tempered by assassination. If the president of the company loses confidence in the subordinate, off with his head; but so long as he is retained in the position his judgment within the designated scope is final. When the question of organizing the production and procurement bureaus of our government was under discussion during the war it was reported that a high official inquired of a business friend: "Do you mean to say that every business is organized like that?" "No," was the reply; "about 95 per cent isn't, and this is the principal reason why 95 per cent of businesses fail." A business need not couple power with responsibility if it so prefers, but it must do it to succeed.

We submit that so must Congress in this matter of railroad regulation. In business to give a man a job and then have another man of similar rank to pass upon his judgment is intolerable. Yet this bill sets up a body equal in salaries to the Interstate Commerce Commission and of longer tenure and subjects its judgment to review by the other tribunal. There is here no element of the judiciary holding an agency of the legislative within constitutional limitations. It is never questions of judgment that are reviewed by a court.

The Interstate Commerce Commission itself affords a perfect illustration. The law having prescribed that rates shall be reasonable and non-discriminatory and Congress having established the commission as an agency to administer that rule, the Supreme Court has again and again declined to pass upon the judgment of that agency. If the commission says a rate is lawful that makes it lawful and no power can reverse that dictum except on the ground that it takes away the owner's right to the use of his property—that is to say, of a fair return upon it.

If a question of jurisdiction is involved—if it is contended that the commission has exceeded the power delegated to it by Congress or that Congress has undertaken to delegate power which it does not itself possess there is a review by the court; but in refusing to annul rates sanctioned by the commission where the question is whether they are reasonable and non-discriminatory the court always says not that it approves the judgment but that it has no jurisdiction to approve or disapprove and washes its hands of the whole matter.

Security Issues and Consolidations

Pursuing the same line of action, the bill empowers the Transportation Board to require that carriers construct new facilities, but it leaves the board, as previously stated, without power to require the revenue necessary for a credit basis upon which to finance the improvement. Again, consolidations are to be dealt with by the board through recommendations which to become effective would require the approval of the commission. Both capital improvements and consolidations are inseparably bound up in the issuance of securities. Yet by this bill the duty of regulating security issues is imposed not upon the board but upon the commission.

Similarly in the field of relations with employees, the bill empowers the Transportation Board to sanction increases in the labor costs without imposing upon the Commission any responsibility in the matter—a responsibility from which the Commission has for several years prayed Congress to deliver it—and yet leaves the Board with nothing but a recommendatory function as to revenue with which to defray such increased labor cost, the final decision as to revenue resting with the commission.

Financial vs. Physical

Although it is not so stated in the bill or in your published abstract, analysis of the measure seems to indicate the theory upon which, whether consciously or unconsciously, the subcommittee classified the several functions for assignment to the board and to the commission respectively. That theory seems to be that the commission will have for its province financial matters and the board physical and other aspects not obviously financial. There are exceptions but the rule runs generally through the bill and is illustrated in a minor clause which places the board in the position of organizing and maintaining a staff and having to get from the commission approval of the salaries.

We believe you can make a sounder classification of functions as between the board and the commission than that of matters which involve finance and matters which do not.

We urge upon your serious consideration whether the problems are not fundamentally those of promotion on the one hand and restriction on the other. We are confident that you will come to regard the assignment of responsibilities chiefly if not altogether with a view to the type of men that each requires for its most effective performance.

We are to have two bodies. Each should be homogeneous in its makeup. The bill admirably points to the two types when it makes the commission the regulator of rates and gives the board the ascertainment of the public need for facilities and the railroads' need for income. If the board is to require a railroad to participate with a carrier by water in the construction of a joint terminal, every step necessary to the consummation of that mandatory requirement should be within the scope of the board—it should decide what is to be done, it should regulate the security issues, it should determine irrevocably the amount of revenue which the railroad will need. If the board is regarded by Congress as a fitter body than the commission to ascertain what consolidations there should be and on what terms, then the board and not the commission is the fitter body to make the final decision.

Full Power with Responsibility

One reason for opposition to a Transportation Board is the misgiving by some that decisions would hang fire between the two bodies. We believe this is a well-founded apprehension. The one way to avoid it and hence to restore railway development is to give full power with each responsibility and review over none except by the courts.

We have been unable to see how the Interstate Commerce Commission could be better employed than in continuing as in the past to prevent injustices. The enlargement of federal jurisdiction over rates which the bill proposes will require an extensive increase in the rate-regulating organization of the commission. Populations hitherto resorting to State bodies for relief must be dealt with reasonably near their homes and by federal officers whose familiarity with local conditions will at all times be supplemented by intimacy with the nation-wide standards which the commission exists both to crystallize and to develop. Nine men may well stagger under such a task of supervision. They may well be spared other burdens.

This would assign the new policy of encouragement for improvement and construction as well as the physical aspects of existing regulations to the Transportation Board, which will be conceived and manned in that light and clothed with independent powers corresponding to its responsibility.

Summary of Proposed Changes

Your sub-committee has adopted as its purpose the objects which the public interest requires. If by amendment it is made more nearly certain that those objects will be accomplished the task will have been achieved and well achieved. Let me summarize for convenience the changes which the Railway Business Association proposes:

(1.) Drop the phrase "take into consideration" and prescribe that rates "shall" be adequate to yield revenue sufficient for the objects which you enumerate.

(2.) Drop the phrase "fair return" and prescribe as an object for which revenue is to be adequate a return designed to attract "additional capital in order to enable the carriers to perform their duties to the public."

(3.) Drop the review of the board's certificate as to needed facilities and income, making it mandatory upon the commission to accept it and sanction rate structures calculated to yield the income certified.

(4.) Drop the requirement that consolidations shall have the approval of the commission, making final the sanction of the board. (5.) Give the board and not the commission regulation of security issues, without review.

War Risk Insurance Held By Railroad Men

THE BUREAU OF WAR RISK INSURANCE of the Treasury Department, in conducting its campaign for the retaining of government war risk insurance by discharged soldiers, sailors and marines, has issued an interesting report concerning the insurance carried by railroad workers in the Transportation Service of the Engineer Corps. This report says in part:

"Locomotive engineers, firemen and trainmen taken from active service on railroads in America and transferred to France as soldiers of the United States, performed notable work in the greatest war of all times. Figures compiled by the Actuarial Department of the Bureau of War Risk Insurance in Washington, show that more than $107,758,200 of government insurance was carried by railroad men engaged in the Transportation Service of the Engineer Corps, American Expeditionary Forces, and upon railroads in the United States. There were thousands of enginemen and trainmen in all branches of the service, but in the compilation of these figures, only these men actively engaged in the Transportation Service of the Engineer Corps are inclcuded.

"The conservation of this insurance of the railroad men has been undertaken by the Bureau of War Risk Insurance which is organizing a volunteer field force with the purpose of reaching every discharged service man to encourage him to maintain his insurance.

"A total of $40,000,000,000, approximately, of insurance was carried by the nearly 5,000,000 soldiers, sailors, marines, army and navy nurses. Of this amount, $22,881,000 was carried by locomotive engineers in the Transportation Service of the Engineers Corps.

"There were 500 gasoline locomotive engineers in the Corps. These men carried $4,350,000 insurance. There were 2,520 locomotive firemen in the Engineer Corps of the American Expeditionary Forces, and 110 in railroad work in the United States. Of this number, 450 were engaged in light railroad work in France and 50 in America. In all they carried a total of $22,881,000 of War Risk Insurance.

"Brakemen, trainmen, flagmen in the American Expeditionary Forces numbered 5,460, while 95 were engaged in this work in America, making a total of 5,555. Of this number, 860 were employed on light railroads in France, and 95 on light railroads in the United States. These men carried $48,328,500 insurance. In addition to these trainmen there were 319 engine watchmen carrying $2,775,300 insurance, and of these men, 282 were overseas. There were in addition 46 enginehouse firemen, carrying $400,200 of war risk insurance.

"There were 706 locomotive inspectors, 630 of whom were in France, carrying $6,142,200 of war risk insurance.

"The Engineer Corps suffered in battle, deaths numbering 59 officers and 1,207 enlisted men. The wounded totaled 216 officers and 6,739 enlisted men. An officer and 153 enlisted men were taken prisoners."

"Clean air week" which began in Chicago on Monday, September 15, as a campaign against smoke and as a preventative against a return of the influenza epidemic, is to be marked by daily conferences between the City Health Commissioner and various organizations to devise means of ridding the city of the smoke nuisance. On Friday, September 19, a conference of this nature will be held between the Health Commissioner and the general managers and federal managers of railroads in Chicago, the superintendents of motive power and master mechanics and representatives of the enginemen's and firemen's brotherhoods.

Opportunities for American Signaling in Far East*

American Firms Must Recognize Differences in Operating Methods to Compete Successfully

By Frank Rhea

THE GOVERNMENT of train movements on the Chinese government railways is usually by block control. Some kind of staff is generally in use on single-track lines and a very large percentage of all the mileage is single track. All stations where trains may meet or pass are provided with "station loops" which are really very short stretches of double track. Separate station platforms are provided for the passenger traffic in each direction. At the more important stations, particularly at junction stations, the main-track switches are interlocked; at other stations interlocking of various degrees of completeness is provided; while at some stations—in fact, in a large number of instances—only hand-thrown switches, locks, and signals are provided.

In all cases the direction of the handling of this apparatus is under the jurisdiction of the station master. The method of signaling is usually in accordance with the practice of the country that has provided the loan funds for building the line, but in the main, the general practice can be said to conform approximately to the British Board of Trade practice. In view of the experience in Australia, it would seem, if the Chinese government railways should be able to make their practice uniform in the next few years, that it would be wise for them to adopt the American three-position, three-speed system of signaling. It is also probable that the arrangement of selective telephones with central control, as installed on the New South Wales railways, could be adopted with much advantage on some of the lines, such as portions of the Peking-Mukden line, where the traffic is growing to such an extent as to require increased capacity of the present single track.

The signaling practice, as already stated, conforms to the practice of the country furnishing the loan funds, but the signaling as a rule is very simple, and approaches closely the British Board of Trade practice. Two signal arms are placed horizontally on separate dolls instead of vertically on one mast, as is the American practice. The signal arms point to the left because all the roads in China run left handed. The block working apparatus is largely of British manufacture. It would be of most decided advantage if all the Chinese railways were to adopt at once the American practice instead of doing so later (as they probably will) at a considerable cost.

Operating Methods

The system of train-movement control is the "station-master method" of operation, as the writer termed the arrangement employed on Australian railways. The practice of putting in the hands of the station master the responsibility for the movement of all traffic is even more pronounced in China than in Australia. It may be said to represent the adaptation of the British and Continental methods to the situation in China, where there are many factors in labor and class conditions that justify such an arrangement. In fact, it would probably be impossible to use successfully the American despatching methods with the train crews carrying out such orders without other direction.

All employees of the Chinese government railways are Chinese, except for a few salaried official positions that are filled by foreigners, usually serving under definite contracts. Educated Chinese are employed to fill many of the salaried official positions, but the less important employees in station, train staff, and similar service, have been recruited from the less-educated classes, and they require education and training to make them capable railway servants. Therefore the "station-master method" of operation seems without question to be the most desirable practice for railways in the Far East, and it is the method in general use. There is no doubt that this method requires more men and is less expeditious than the methods in vogue in the United States, particularly in the running of passenger trains, but this is not a serious handicap.

Imperial Government Railways of Japan

The parliamentary head of the Japanese government railways is the prime minister. The administrative and operating head is the president, who has under his direction a complete organization, consisting of a general staff and a director with a complete division staff in charge of each of the five grand divisions into which the entire system is divided.

The system of operation is the departmental or branch method, but there is superimposed the added feature of what might be termed a semi-military organization. By this it is meant that each official is given a rank and grade, with the result that in every contingency there is a ranking official who will have authority to take action. The general administration, in charge of the president, has a vice-president and a general staff divided into six departments, or bureaus, as follows: Secretariat, general administration, traffic, finance, engineering, and machinery and rolling stock.

The duties of the several bureaus are indicated by the titles, except the general administration bureau, which may be regarded as a commission for the control and regulation of the light railways, private railways, and tramways. This bureau consists of three members, one of whom is the director, one the secretary and one an engineer. They supervise in every sense the actions and operations of all the above classes of railways, even to the extent of the specifications for materials and equipment to be bought.

The method of train operation is the typical "station-master method" in all details, and with the conditions present and the help available this is admittedly the eminently safe and proper arrangement. Outside of the Tokyo electrified district the signaling is all in accordance with British Board of Trade practice, but the lines as a rule are inadequately signaled. In the Tokyo electrified zone some automatic signals are installed, but these are somewhat out of date and include several kinds of signals. With the amount of traffic on the Japanese government railways and the small amount of signaling at present, there is every reason why the most modern method of signaling should be adopted for future work. It is important that these lines be adequately signaled as the traffic grows, and they will ultimately require very intensive signaling.

Another feature would be the extensive use of selective telephone apparatus for establishing central control—by this

*From a report prepared by Frank Rhea on the Market for Railway Supplies in the Far East and issued by the Department of Commerce. Mr. Rhea spent the larger part of two years in China and other countries of the Orient as a special agent for the Department of Commerce, investigating the opportunities for the introduction of American railway materials there.

means retaining all the safeguarding features of the station-master method of train operation and still getting the permissible expedition of despatching methods.

Korean Government Railways

The organization is of the typical branch or bureau type, being very similar to that of the Shantung railway which has five bureaus established in the railway department of the Department of Civil Administration in the Tsingtau army headquarters with a chief appointed for each bureau. The bureaus are as follows: General affairs, traffic control, operations, engineering and finance. The bureau of operation has charge of the operation of trains, correspondence relating to operation, signaling and the conduct of the railway. The bureau of engineering has charge of new construction and repairs, railway, and buildings; operation of electric power houses for railway purposes, and control of lands and buildings in railway use. The method of train operation is the typical station-master workings with very little signaling and interlocking, all of which conforms, in general, to the practice on the Japanese railways.

South Manchuria Railways

The method of train running conforms strictly to the station-master system already referred to in connection with the Japanese railways. All signaling is along the lines of the British Board of Trade practice and is all very limited, both for signals and interlocking. The same remarks concerning modern methods of signaling and selective telephone apparatus for central control apply here as in connection with the Imperial Government Railways of Japan.

Manchuria and Eastern Siberia

The organization is of the typically bureaucratic type in all features. Methods of operation and train running conform to the station-master method in all its purity. There are buffet stations, averaging about 25 miles apart, where ample time is allowed for refreshment. One memorable feature of Russian train operation, particularly in yard switching, is the constant use of a large resonant whistle to sound a code of signals to switchmen who are located on the ground to throw switches for the handling of cars. In the yard at Harbin a surprisingly large number of men are used as ground switchmen. While the writer made inquiry as to the performance figures of these lines, it was impossible to obtain data that would satisfactorily show the facts and represent the normal conditions.

The Manila Railroad

Train-running methods conform strictly to the British "station-master" system, referred to at length in the Chinese and Japanese sections above. The small amount of signaling is along the lines of the British Board of Trade practice and as simple as it is possible to make this system of signaling. With the class of employees available, consisting almost entirely of natives in the train and station service, there is little doubt that this is the best method of operation, and government operation will be an added reason for continuing this arrangement.

Conclusions and Suggestions

While the distinctly departmental organization and the strictly station-master method of operation may impress representatives of American concerns doing business with the Chinese and Japanese railways as not being the best arrangement, it is the writer's opinion that the conditions are such that both these situations must be accepted. Business should be done with these railways along these lines particularly when it is a question of specifications or equipment (though this will seldom be the case outside of such matters as those involving signaling and train despatching). It may be true that by these methods the Far Eastern lines do not move traffic with the same speed as the American roads, but to do so they will be obliged to take a greater amount of risk on account of the class of men with which they have to operate these railways.

With the small amount of really modern signals and central train-control apparatus now installed, there is every reason why the simpler three-speed American method of signaling and selective telephones to direct present train working should be adopted in both Japan and China. This could be done with benefit, particularly to take care of the growing traffic which will necessitate increasing the traffic capacity of these railways from time to time.

Orders of the Regional Directors

INDUSTRIAL DETENTION OF COAL CARS.—The Northwestern regional director, file 44-1-205, calls on federal managers for reports to indicate responsibility for the detention of coal cars. Each agent is to report all coal daily, showing consignee, number of cars placed and number unloaded, number on private or team tracks placed for unloading and not released, and the number held for placement on account of the disability of the consignee.

Commercial Coal Supply and Requirements. — The Northwestern regional director, in Inquiry 239, requests the compilation of information concerning the storage and prospective needs of commercial bituminous coal in the Northwestern region. Reports are to show net tons on hand September 1, 1919, net tons required from September 1 to December 31, 1919, and the net tons required from January 1, to March 1, 1920. These three items are to be subdivided into industrial, public utilities and other consumers, including retail dealers, and these in turn are to be reported separately by states.

Accident Prevention Drives.—The Northwestern regional director, file 97-1-20, announces the National Railroad Accident Prevention Drive, from October 18, to 31, inclusive, and suggests that federal managers call a meeting of general officers to discuss plans for making this drive a success, the meeting preferably to be held in conjunction with the meeting of the General Safety Committee if the meeting of that committee is scheduled to be held in advance of October 1.

Chicago Joint Agreement Between Brotherhoods.—Circular 88, of the Northwestern regional director, quotes rules of the Chicago Joint Agreement between the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, which are to be incorporated into existing schedules on railroads where such schedules exist and where they are not already included.

Export Bills of Lading.—The Southwestern regional director in Supplement 4 to Circular 240, defines the term "North Atlantic Ports," as constituting all ports in the United States from Norfolk, Va., north. In Supplement 5, to the same circular, the Southwestern regional director amends paragraph 6 of the original circular containing a notation to appear on all bills of lading. In Supplement 6, to the same circular, the Southwestern regional director amends Supplement 1 to the same circular, relative to the payment of undercharges.

Fire Prevention—Smoking.—Supplement 11 to Circular 32 of the Northwestern regional director states that during 1918 there were reporteed to the Fire Loss and Property Protection section, 252 fires directly attributable to carelessness in smoking or the use of matches, with a total loss of $159,629, and calls attention to the necessity for strict enforcement of the no smoking rule in wood working shops, paint shops, etc.

Railroad Hearings Before House Committee

Protest Against Plumb Plan by E. J. Rich. Railway Surplus and Business Prosperity

WASHINGTON, D. C.

THE FOLLOWING PROTEST against the Plumb plan was presented before the House committee on interstate and foreign commerce on September 12 by E. J. Rich of Boston:

"I think I may fairly say that I am bearing to you the message of the manufacturers of the United States. I have been requested to bear this message and to enter this protest against the plan of the railroad brotherhoods by the following organizations:

	Members.
Associated Industries of Massachusetts	1,300
Employers' Association of Montana	1,600
Indiana Manufacturers' Association	800
Iowa State Manufacturers' Association	1,500
Connecticut Manufacturers' Association, Inc	600
Ohio Manufacturers' Association	550
Nebraska Manufacturers' Association	500
Wisconsin Manufacturers' Association	500
West Virginia Manufacturers' Association	350
Kansas Employers' Association	400
Manufacturers and Employers' Association of South Dakota	225
Utah Manufacturers' Association	200
Georgia Manufacturers' Association	250
California Manufacturers' Association	302
Associated Industries of Missouri	130
Kentucky Manufacturers & Shippers Association	173
New Hampshire Manufacturers' Association	400
Colorado Manufacturers' Association	560
Alabama Manufacturers' and Operators' Association	100
Associated Merchants & Manufacturers of New York	2,000
Employers Association of the Inland Empire	540
Pennsylvania Manufacturers' Association	4,200
Michigan Manufacturers' Association	1,050
Total membership	18,230

"The total invested capital represented by these organizations is not less than twenty billion dollars.

"I am also requested to enter the protest of that body of vigorous 100 per cent Americans, the United Commercial Travelers' Association, with a membership of 82,000. The Massachusetts Chamber of Commerce has also requested me to enter its protest against the brotherhood plan. This organization is composed of 69 constituent bodies, local boards of trade, having a membership of more than 40,000. The membership of these bodies is thoroughly representative of the great middle class. One has only to attend their conferences and meetings to be deeply impressed with the fact that their efforts are directed primarily towards the protection of the human rights of labor, rather than towards the preservation of the property rights of capital. I do not claim that this attitude is due to unselfishness, but rather to an enlightened comprehension of the real way to protect their private interests. It is in this spirit towards labor that this protest is made against the plan of the railroad brotherhoods. The manufacturers desire that their private interests may not be jeopardized. They take pride in what has been achieved by private enterprise and do not wish to exchange their property for a government bond and become coupon-cutters, but rather they desire to continue as active agents in the great industrial work of the nation.

"We do not anticipate that the railroad properties, or later our property, will be confiscated. We do not take seriously the implied threat of revolution which seems to have found lodgment in the heated brain of one of the sponsors of the Plumb plan. We have not the slightest apprehension that this committee will recommend the adoption of the plan, or that Congress would for a moment seriously consider it. When members of this Congress have spoken on this subject, there has been no uncertain ring to their utterances.

"It has been stated that this new and strange doctrine is spreading like wild-fire throughout the working classes. This may be an exaggeration, but there are many evidences that it is beginning to receive much enthusiastic attention in the ranks of organized labor. The plan is an adroit one. It has a peculiarly alluring appeal to prejudice and self-interest, and it is because of the danger arising from such an appeal that we desire to enter this vigorous protest.

"The principles of the plan are not the principles of socialism, for socialism in its theory is based upon what its advocates deem to be the public good. Socialism is the nationalization of industry in the interest of the public. The Plumb plan places all the burdens on the public, and gives to a privileged class all the alleged benefits. We see in bolshevism a perverted socialism. Under a bolshevistic regime, the workers are to manage all industry and to take all the profits. When the plan of the brotherhoods is analyzed, it is seen that the fundamental principle is that the public shall own the instrumentalities of transportation, which shall be managed for the benefit of the workers, by the workers, and if there is a loss, that loss shall fall upon the public.

"The fallacies of the plan have been punctured by the members of this committee, and its menaces have been clearly shown. But the issue is so momentous, and the danger of the spread of this pernicious doctrine so great, that I am sure you will pardon me if I undertake a brief analysis.

"It is first proposed that the government shall buy the railroads. It is claimed (and with truth) that the government can raise money at lower rates of interest than private corporations. This is one of the strongest arguments of all government ownership advocates. It is to be placed upon the credit side of the balance sheet, to be considered for what it is worth. The claim, however, that the government can raise money at four per cent is ridiculous. It would probably have to pay over five per cent. If so, the saving would not be much more than one per cent on the value of the railroads.

"It is claimed further that the public would not have to pay interest in the shape of railroad rates upon an inflated capitalization, and that by reducing the capitalization by, say, five billion dollars, a still further saving would be effected. It is true that there has been gross manipulation of securities and that many railroads are weighed down under a capitalization upon which the public ought not to be compelled to pay charges. Furthermore Congress ought now to provide a means whereby the strangle-hold which the banking interests necessarily have on the weaker railroads should be relaxed. But the amount of over-capitalization has been greatly exaggerated. There are some railroads whose capitalization is less than the money actually put into them, and there are many railroads organized in the early days whose bonds represent the cash and whose stock represents the hope of investors. Doubtless many railroads are over-capitalized in the sense that their capitalization is greater than the amount of money actually put in, but they are not over-capitalized in the sense that, under a wise method of financing, more capital was issued than was necessary in order to start the enterprise, and that is the test.

"In the last analysis the government will pay what the courts determine to be their lawful value, but that value, in the judgment of those qualified to judge, will not be materially less than the aggregate capitalization. The brotherhoods, in advocating government ownership on the basis of actual value, are proceeding along paths which have been trodden by many earnest and honest men, but suddenly the

path diverges into the wilderness of Russian bolshevism. A gigantic corporation is to be formed to take over the railroads with the money of the people. The whole body of employees constitute this corporation, and *'the stock of this corporation shall be held in trust for the benefit of the employees.'* This is the bald statement made by the proponent of the bill before the Senate committee last winter.

"Not only is the corporation to be run for the benefit of the employees, but it is to be managed by the employees. No one is misled by the adroit wording of the plan in this particular. Under this plan the employees are the corporation. How long would an officer hold his position who was not zealous in advancing the interests of his real employers? This attempt to convey the idea that the officers would represent something other than the interests of the employees is transparently dishonest. It is not intended that they should represent any other interests than those of the so-called classified employees, and any officer who attempted to ignore the interests of these employees and to favor the public interests would be summarily removed.

"This committee by its incisive questions has torn off the mask and has shown to the country the real power behind this corporation. But the advocates of the plan say that the profits are to be equally divided between employees and the public, and that in this way and because of this, the corporation will be managed in the public interest. The proponents of the plan grow eloquent in expatiating on the tremendous incentive which will be given to every employee to work efficiently and economically. Why this sudden change of attitude on the part of organized labor towards profit sharing and bonuses? In the past they have opposed anything which would speed up production and put a premium on efficiency.

"Let us analyze the proposition a moment. Wages are by far the greatest item of expense in the operation of a railroad. How are wages to be fixed? By an arbitration board, composed of members equally representing the employees and the officers. *That is, all the arbitrators are elected by those who will profit by the award, and who themselves, as employees and officers, will likewise profit by their own award* —all recipients of wages whose fairness they are determining. Today the officers appointed by the corporation represent the corporation, but under this plan they are appointed by a board all of whom are in the employee class. Because today the officers are the opposing party in a wage arbitration, there is an attempt to make it appear that they would be the opposing party in a wage arbitration under this plan. It is a device too transparent for serious consideration.

"Will initiative and incentive to efficiency be increased under this plan? The railroad employees are making wage demands which will probably average not less than an increase of 50 per cent over their present wages. Take the case of an employee earning $2,000. An increase of 50 per cent would amount to $1,000. That is what he would get if his demands were complied with. What would be his share of the surplus? If the profits were $100.000.000, the combined body of the employees would get $50,000,000, which, if divided equally among the 2,000,000 employees would amount to $25 apiece; somewhat less in the case of the classified employees. Which affords the greater incentive to effort, to work efficiently and conscientiously for the accumulation of a surplus of which they would get $25, or to demand from their own officers whom they elect and control an increase in wages? Certainly $25 has not the same lure as $1,000. Would the employees work conscientiously and efficiently for the accumulation of a surplus, or would they work the directors—*their* directors—for an increase in wages?

"But there would be no surplus, and no hope of surplus. After the payment of wages—a first lien on revenues—and other operating expenses, sinking fund requirements, extension of railroads into new territory, improvements and betterments, there would be nothing but deficits to be met by taxation. The employees would never give a thought to the will o' the wisp of a surplus.

"It is interesting how tenaciously the brotherhoods hold on to the right to strike. It would seem that as the employees fixed their own wages and conditions of employment there would be no occasion for a strike. But bear in mind that this plan originated with the 'Big Four,' who though more thoroughly organized than any other grades of employees are in a decided minority. Is there any doubt that the strike provision is retained as a club to be used against other organizations?

"The greatest evil which would come from this plan would be the utter demoralization which would exist throughout the ranks of railroad labor. What a scramble among labor leaders for the directorships and the important offices! *Directors once elected to office are subject to recall by those who elected them.* If the shopmen thought that the 'Big Four' were getting more than their proper amount of the spoils and should combine with the section men and other grades of employees, the existing officers would be recalled and their own leaders designated. One set of ambitious labor leaders would succeed another, even within each organization, and one organization would combine with others for the purpose of ousting those for the moment in power.

"It is fortunate that the issue is raised in a way that it can be met; for the defeat of this revolutionary plan will quiet agitation for its extension to other lines of industry. It is fortunate that this issue is raised before a Congress in which the members of both parties are standing firmly, courageously, fearlessly, in defence of American institutions."

P. J. Coyle, president of the Order of Railway Station Employees, urged the necessity for legislation establishing some tribunal to protect the interests of railway employees after the return of the roads to private management and to prevent the railroads from attempting to keep their employees from organizing. He also had some criticisms to make of the effect of the Railroad Administration's wage orders, saying that its attempts to standardize wages, while of great benefit to some of the employees receiving the lowest pay, did not work out equitably.

Hoyt Chambers, secretary of the National Civic Betterment League, told the committee that any legislation that would tend to "validate" anything like the present par value of railway securities would be a "great public larceny." To prove it, he said, he had taken a list of 12 railroads and computed the market value of their securities on the basis of newspaper market quotations as of September 9 at 56 per cent of par and on this basis he calculated the market value of all the railroads at $11,000,000,000. He also explained to the committee the reason for the high price of coal by saying that the railroads are holding up hundreds of cars of company fuel but that they occasionally let go of some of this coal to favored dealers at a profit. He said he was a former railroad man and knew what he was talking about and that he had evidence from 14 railroad division points but when pressed by the committee declined to name them without asking the permission of his informants. He also charged that the railroads are accumulating supplies at government expense sufficient to last them for years to come but he also declined to be specific on this point.

K. D. Loos, of Chicago, for the National Coal Association urged amendments to the car service provisions of the Esch bill, which he said, had already been adopted by the Senate sub-committee in the similar provisions of the Cummins bill, to impose more specific requirements upon the railroads to insure the equitable distribution of cars in times of shortage, in order, he said, to prevent the railroads from reviving the practice of assigning cars for railroad fuel and not count-

ing them against the mine rating of the coal operators having railroad fuel contracts. Before federal control, he said, the railroads used variations of this practice to obtain lower prices for their coal in return for the assurance of a full car supply, with the result that the mines not having railroad contracts were discriminated against. The practice was stopped last year by order of the President and by agreement between the railroad and fuel administrations at the time the roads were required to pay the regular price for coal but the operators were afraid it might be revived after the return of private management. The Interstate Commerce Commission now has power to issue orders prescribing the method of car distribution, he said, but they have proved ineffective because they run only against the roads named as defendants, because the orders expire in two years and because by the time the order is issued the period of car shortage is over and there is no redress for the past discrimination. He urged an amendment for the purpose of making the declaration of law specific with an effective penalty.

Representative Cooper remarked that if the plan of the United Mine Workers for a five-day week and a six-hour day is put into effect the operators will not need so many cars. Representative Sanders added that if the complete plan is adopted there would be no coal operators because it also provides for nationalization of the coal mines.

Railway Surplus and Business Prosperity

Edward B. Leigh, president of the Chicago Railway Equipment Company, testified before the committee on September 15, urging the importance of allowing the railroads to earn a surplus. Mr. Leigh said in part:

"What I ask you to consider relates specifically to our recommendation concerning surplus earnings. In the statement of objects made to you by President Johnson, as favored by our association, was this:

> ' * * * accumulation of surplus railway income in good years in order that in poor years railway maintenance, additions and betterments may be carried on vigorously.'

"Senate Bill 2906, the Cummins bill, looks in that direction. One of its provisions would make certain specified dispositions of a carrier's return in any year in excess of a fair return. In laying down the rule which the regulatory body is to follow in determining what is a fair return, the bill employs this language:

> 'A fair return * * * which may include a just allowance to provide reasonably for future years in which there may be insufficient earnings.'

"That is to say, wholly apart from the question of taking income from one road and giving it or lending it to another, or for the benefit of those who use another, the Cummins bill deals directly with each individual line and recognizes the legitimacy of its accumulating in prosperous years a surplus against lean years. Our association does not say that income should be diffused in any of the ways suggested. There are undoubtedly serious legal and constitutional difficulties. We do not pretend to have discovered a provision which will attain the end in view. What I am here to urge is that you adopt as your own the basic thought underlying the definition of a fair return which I have just cited from the Cummins bill, namely, that a surplus should be permitted, to any railroad that can earn it, as a fund for years of adversity.

"Some of the plans so ably conceived and presented to you, seem to be animated primarily by solicitude for the present holder of outstanding securities. Some of the so-called rules for rate-making have set forth that rates should be such as to yield a return; as if the be-all and end-all of rates was the return. To the security-holder, of course, the return is the object of the investment. As a security-holder he has no stake beyond the fact of the return and repayment of the principal. But to the user of transportation and to the user of what is transported, the return is merely a means to an end—namely, attraction of new capital for additions and betterments, including those which promise economies and, hence, ultimately a check on rate advances.

"It is gratifying to observe that there are certain leading plans in which the public rather than the security-holder is specifically made the primary object of solicitude. One of these is the Cummins bill. That measure sets forth the aspects which must be considered by the rate-regulating body and gives prominence to the needs of the people for transportation, hence for new capital, and hence for adequate rates.

"The statement of the same object by the Railway Business Association is this: ' * * * a federal statutory rule of which the effect will be that rates and fares of the railways within each traffic section shall be sufficient to yield the average railway in the group in the average year its necessary expenses and to provide the credit basis for average facilities.'

"In discussing the public interest in adequacy of rates and adequacy of return, you have ample testimony touching upon adequacy of facilities as a necessary underlying aim. I do not now volunteer any more. There is another aspect from which the national interest should be considered, and to that aspect I invite your attention.

"I refer to the effect of railway purchases in and of themselves as a stabilizer of industrial and commercial activity in every line whatever throughout the country.

"Ever since Henry Clay raised his voice for policies designed to stimulate prosperity, the attitude of our government has been one of solicitude for the welfare of each and every element in the population; first, for the sake of each element, and, second, for the sake of the country as a whole, all of the units being regarded as prospering by the prosperity of each. Until a few years ago this was the attitude toward railroads, and the frame of mind in which members of Congress are listening to the testimony of citizens seems to give promise that the attitude toward railroads may soon become such again.

"It is true that a large proportion of Americans, though probably at no time a majority, have always held the view that the government should avoid positive aid to citizens in their occupations. Such aid was asserted to be artificial stimulation, the cost of which fell on all the people, whereas the benefits might not be equitably diffused.

"Railroads may be said to constitute an exception, since the creation and maintenance of highways is a duty of government, whether performed directly or through franchises.

"But however you take it—accepting the theory of those who would let the citizen work out his salvation without government aid, and granting, for the sake of argument, that rail highways are not exceptional in that respect—what have we had? In place of aid, positive and aggressive suppression. The government has regulated rates under a statute which provided for restriction but did not provide for adequacy; and the consequence has been a practical cessation of railroad building and improvement, if not also an impairment of maintenance standards. This is only another way of saying that, by keeping rates too low and by making investors fear excessive restriction, which may be equally harmful, we have put a governmental brake on the purchase of railway supplies and hence on the industries which have plant and organization for their production.

"The government has in that field restrained trade. By what almost everybody now sees was plain neglect the government has interfered not only with the prosperity of an element in the nation, but with the prosperity of the whole nation.

"In a great country such as ours and in matters which

are under federal jurisdiction it is inevitable that here and there, for a time at least, mistakes of this sort will remain in force. We can only do our best to find and correct them. But a highly practical rule which we follow by instinct is to place on the docket, for first and most vigorous attention, those situations where a change in government policy would probably affect the largest number of people. The more wage-earners are involved, the wider-spread are the secondary effects.

"In general I make the statement that no occupation except agriculture employs so many people as do railroading and providing the needs of railroads. From raw material to finished product those employed in railway supply industries are believed to be pretty close to 2,000,000. Apparently another 2,000,000 are now employed by the railroads themselves, a large number of these engaged in the maintenance, improvement and extension of the properties.

"If new railroads were in the course of construction the number of employees would be increased by many thousands more whose existence makes no entry upon the statistics of employment compiled by the Interstate Commerce Commission until the new road is completed and actually doing business as a common carrier.

"Without attempting an exact mathematical statement of the number employed, we are in position to make a conclusive mathematical demonstration of the effect which the prosperity or adversity of these many millions has upon the prosperity or adversity of the nation as a whole.

"And the important phase of the railway problem which I desire to lay before you—one entirely different from any you have heretofore had presented to you—is found in a measurement of the extent to which restriction upon railway buying actually does depress general business prosperity, and, conversely, the exact extent to which normal railway purchases can and do hasten return of general activity following a depression, and prolong prosperity once restored.

"Comparatively few realize what a great factor the railways are in the buying field. Having this in mind, a short time ago it occurred to me to try to present this in some graphic form, which would more quickly portray this fact; to give a sort of "back-ground," as it were, for the more ready appreciation of this situation."

Mr. Leigh then presented and explained to the committee his charts showing the relation of railroad purchases to general business conditions, which are already familiar to our readers.

Rewarding Individual Efficiency

A. H. Smith, president of the New York Central, in a letter to Chairman Esch of the House committee, urges that participation of employees in the results of their labor ought to be placed on an individual basis, as a reward for individual efficiency that can be measured, instead of on the general basis of profit-sharing so frequently advocated. Mr. Smith said in part:

"Nearly all of the men on these railroads are, in my opinion, of our best citizenship. They are virile, stable men. Many of them do work of great importance and consequence. Their compensation must be relative, all conditions of their employment must be understood, and their relations to other employment must be considered.

"All men in all walks of life are given the same amount of time—lawyer, farmer and artisan. In addition, there is skill and effort which is variable and must be allowed for as they are furnished. I believe our solution of the railway wage problem is to give the individual employee a participation in the results of his individual labor. This is apparent at the time and ascertainable, and can be paid promptly. To participate in the profits as has been proposed is uncertain and is not the true measure. Such a plan will cause suspicion and distrust, unhappiness and unrest. It is not constructive even if it is feasible, which I doubt. It will not produce uniform results on different properties or on the same properties, and such inequalities will in time disrupt any such arrangement, and besides, it looks like confiscation.

"The man who by skill and effort, care and efficiency, moves a given tonnage in less time than others should have reward. Let us consider as a unit of production a block of railroad say five miles long, worth a million dollars, containing a train consisting of a locomotive worth $75,000, cars worth $240,000, loaded with freight worth $1,000,000. It is like a machine in a shop. The skill and effort which gets the work to the machine, through the machine and away from it contributes to diminish the time the machine is used for a given production, increasing the output and decreasing the cost. So the block should be used efficiently and the train moved expeditiously under safe rules. Any skill and effort that clears the line and enlarges its capacity should have reward.

"To illustrate: Assuming that the normal time of operation over a division for a freight train might be ten hours. Then the skill and effort which move it in nine hours have increased the productivity of the machine and should receive a premium. Conversely, if eleven hours are required a penalty is sustained.

"Man cannot survive without incentive. Without incentive there is no progress. Given incentive a man will try to progress. He will combine the factor of time, which is common to all alike, with skill and effort as he develops. What he gains for himself and contributes to the benefit of mankind will depend on the result of his use of his faculties and skill with time and effort.

"Present labor organizations tend to remove incentive by a horizontal leveling process. This submerges the individual into the average. It causes discontent because it violates human nature. Labor organizations will, eventually if not now, feel the effect of this principle and must ultimately recognize it. It must become the doctrine of the future labor leader if he is to point the way with truth and real leadership. It makes no difference whether facilities and plant are provided by privately owned capital or by publicly owned capital. The principle is the same. The waste of time with these facilities is delayed or inefficient production is a burden on all who must live by their production and those whose means have been borrowed or taxed to provide the plant."

Consolidation of Express Companies

George C. Taylor, president, and T. B. Harrison, general counsel, of the American Railway Express Company, appeared to ask that the legislation providing for the return of the railroads may contain a provision which will permit the continued consolidation of the express companies, which were merged last year under the direction of the Railroad Administration. The merged company was taken over by the government in November. Mr. Harrison said that the express companies were "scrambled" by a director general at the time when he thought that federal control was going to last a long time and that it had resulted in such great economies in overhead and traffic expenses that the express companies desire the combination continued. He said traffic expenses had been cut 50 per cent. The company's contract with the government does not provide for any compensation, but merely guarantees it against loss during federal control. Because of the unexpectedly large increases in wages the company has been operating at a deficit of about a million dollars a month, but with an increase in business and a slight increase in rates it was thought that the company could operate successfully. Mr. Esch asked about the effect of competition of the parcel post. Mr. Harrison indicated that the parcel post was not worrying the express companies much, saying that they carry a great many times as much business as the parcel post. The Esch bill, he said, provides for con-

solidations with the approval of the commission, and the Cummins bill provides a more definite plan of consolidation of railroads. Mr. Harrison said the express companies would like to have the provision of the Esch bill if it applies to them, but there is some doubt about whether it applies to consolidations already effected. He also opposed any rigid long and short haul bill, saying that it would absolutely destroy the present structure of express rates made by the Interstate Commerce Commission.

Newman Erb, president of the Ann Arbor, presented a statement before the committee urging the importance of allowing railroads to earn a sufficient surplus to provide for unproductive improvements and as a provision against lean years. He said that as between the conditions which formerly prevailed and government ownership, he would prefer government ownership, or as between former conditions and a plan of regional consolidation he would prefer the regional consolidation, but the important thing was to give assurance that the railroads should have sufficient revenues to furnish the required service and that the stronger lines should not receive more than they need and the weaker roads should not receive less. He also urged some government supervision over receivrships and consolidations to prevent the control of railroads by men who have no financial interest in them. He also advocated common ownership of freight equipment used for interline business.

W. M. Hopkins of Chicago discussed various provisions of the Esch bill and W. W. Manker, assistant traffic manager of Armour & Company, replied to statements made by a former witness that the packers are given a great preference by being permitted to own their refrigerator cars.

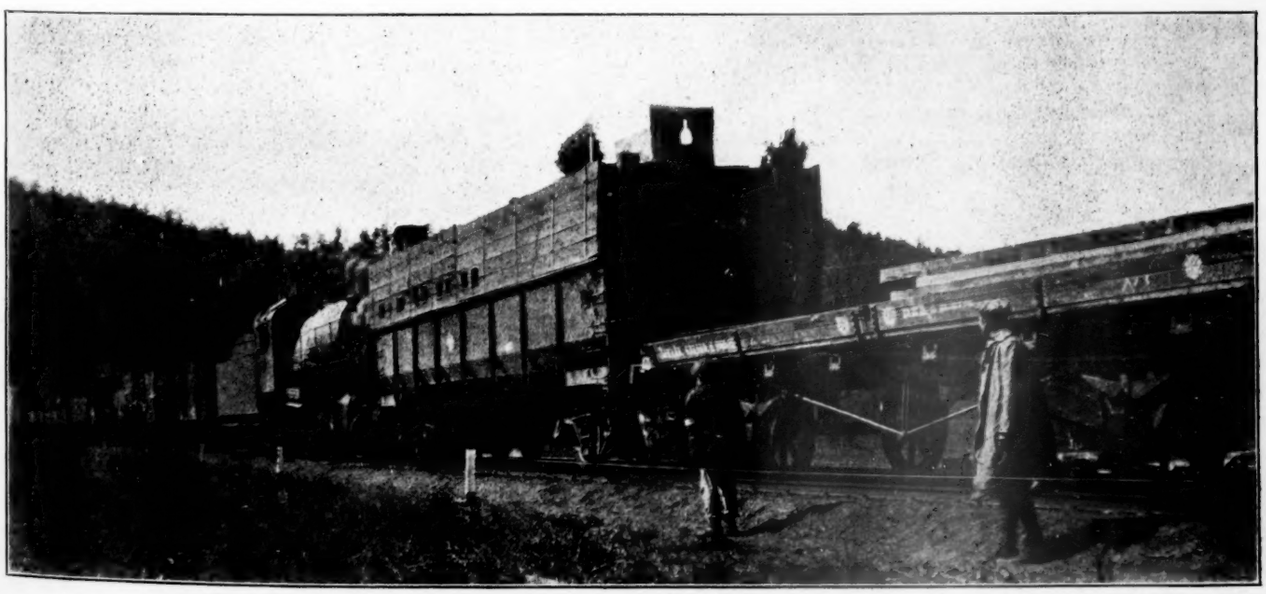
The views of the National Industrial Traffic League on reconstruction railroad legislation were expressed by Guy M. Freer, president of the league, who told the committee that practically all the league's recommendations were included in the Esch bill. He also discussed the Senate bill and the Cummins bill to restore the rate-making jurisdiction of the Interstate Commerce Commission. Regarding the provision inserted by the House committee in reporting this bill he said it was the idea of the league that during federal control jurisdiction over rates should be left with the federal commission but that there was no particular objection to the amendment if an additional provision could be added that in the event the President finds it necessary to make a general change in rates the same advance shall be made in the state rates without securing specific authority from the state commissions. Instead of 120 days, as provided by the Esch bill, Mr. Freer said the league would prefer a suspension period of six months. He opposed regional commissions but suggested that the Interstate Commerce Commission might establish branch offices. He also opposed giving the commission jurisdiction over port-to-port rates. Referring to section 14 of the bill, which requires the commission to take into consideration the cost of labor and other operating costs, Mr. Freer said that the cost of labor was given undue prominence unless all operating costs, which the commission is required to take into consideration, are also enumerated.

In many respects, Mr. Freer said, the Senate bill corresponds with the Esch bill, but it contains many other provisions, some of which are not favored by the league. It is generally in favor of a plan for preventing strikes, but believes that the public, as well as the employees and the employers, should have representation on the wage board.

B. F. Wooding, of Montclair, N. J., appeared before the committee on September 16 to urge legislation to require the railroads to install automatic train control devices, or more particularly the Wooding device, and he presented a long statement outlining its merits. Chairman Esch said the committee was not interested in any special device but that it was interested in any practicable method of protecting life and property that can be available within a reasonable cost.

Chairman Esch has announced that Director General Hines will not appear before the committee to give his views on railroad legislation. It has been understood that the director general would appear before the hearings were concluded and an effort was made to have him as the first witness, but the director general has informed the chairman that his views are outlined in an address he made at Swampscott, Mass., in June, which will be incorporated in the record of the hearings.

It was hoped that the hearings might be concluded this week, but indications at present are that they will run into next week.



Supplies for the Front in Russia

Doings of the United States Railroad Administration

Efforts to Improve Car Supply Situation. Traffic Committees Directed to Clear Dockets

WASHINGTON, D. C.

SHIPPERS who are complaining of car shortage and railroad officers who are called upon to explain why there is a car shortage will doubtless be delighted to learn that the fact is not due to government management, and that while there were car shortages on August 1 there was a net surplus at that time as compared with a net shortage on August 1, 1917, when the railroads were under private management. They will also doubtless appreciate the information that although there were about 216,000 freight cars officially classed as in bad order on July 1, there were still over 2,000,000 cars in service and not withdrawn for repairs on that date, which number was greater than the number of cars not withdrawn for repairs on July 1, 1917. These facts are contained in a statement relative to the freight car situation issued from the director general's office this week during his absence.

It is stated that they "ought to be borne in mind by the public" in appraising car service conditions. But those who are interested in the situation as of a more recent date may get their information from some other source, or in such a way that it is not so likely to be used by the public in appraising conditions.

The statement shows that on August 1 there was a net surplus of 88,000 freight cars as compared with a net shortage of 33,000 on August 1, 1917. From other sources figures are available showing that during the last week of August this year there was a net shortage of about 17,000 freight cars as compared with a net surplus on September 1, 1918, when the country was still at war. The Railroad Administration has not heretofore used its figures of car surpluses and shortages for publicity purposes, on the ground that they were inaccurate or liable to be used in such a way as to be misleading. Such figures were compiled and published by the American Railway Association up to April 1 last year, when they were discontinued by the Railroad Administration at a time of shortage. Later they were made up, although not given out publicly by the Railroad Administration and showed a comfortable surplus of cars during the latter half of 1918, which was increased to around 500,000 in March of this year. For a couple of months the Railroad Administration censorship allowed them to be published and for June 1 the net surplus was about 300,000. The net surplus had entirely disappeared by the last week of August when surpluses amounting to about 45,000 were reported throughout the country, whereas the total number of unfilled car requisitions was about 62,000.

The Railroad Administration statement is as follows:

"Walter D. Hines, director general of railroads, today authorized the following statement relative to the freight car situation:

"Current discussion of car shortages and related questions makes it important to bring to the attention of the public the fact that, contrary to what seems to be the public assumption, conditions in this respect are substantially more favorable than they were in recent years prior to the war.

"On August 1, 1917, the total car surpluses reported throughout the country were 43,481 cars, whereas on August 1, 1919, the total car surpluses were 107,900. The total number of unfilled car requisitions on August 1, 1917, was 77,257, whereas the total number of unfilled car requisitions on August 1, 1919, was only 19,271.

"The number of freight cars in service and not withdrawn for repairs on July 1, 1917, was 1,983,000. The number of freight cars in service and not withdrawn for repairs on July 1, 1919, was 2,065,000.

"The very fact of unified control of all the railroads has tended to concentrate the comments upon any inability to perform 100 per cent of the transportation required, but the foregoing figures show that the situation during and at the end of July, 1919, was very much better than in the corresponding period in 1917. It is believed this fact ought to be borne in mind by the public in appraising the existing car service conditions.

"The extent to which freight cars have been repaired in recent months has been the subject of some comment. The number of freight cars repaired and returned to service by months during the present calendar year has been as follows:

January	2,027,992
February	1,747,146
March	1,953,225
April	1,897,698
May	2,039,661
June	2,013,697
July	1,790,097

"On account of the fact that the Fourth of July came on Friday this year, and of the proportionately small amount of work done on the following day, the falling off in the number of cars repaired in July as compared with June is clearly explainable. The number of cars repaired per month in May and June kept fully up to the number repaired in January, although in May and June many shops were still working on shorter hours than in January.

"Much stress has been laid on the increase in the percentage of cars withdrawn for repairs in the recent months up to and including July. The fact is that this increase in the number of cars withdrawn for repairs has not been due to a falling off in the number of cars repaired but has been due to a number of complex factors which have arisen from the conditions resulting from the war, from the exceptional pooling of cars during unified control, and from questions arising between the Railroad Administration and the railroad corporations. The emphasis which has been laid upon the percentage of cars withdrawn from service for repairs is, therefore, misleading and does not give a correct idea as to the number of cars actually in service. The number of cars actually in service, not including bad order cars, increased from 1,983,000 on July 1, 1917, to 2,065,000 on July 1, 1919.

"The Railroad Administration, however, is not content with its ability to point to the fact that transportation service is more favorable than it was two years ago. On the contrary, extraordinary efforts are being put forth to secure the greatest possible improvement. Although the number of cars repaired in May and June, 1919, was fully up to the normal number of cars repaired, the Railroad Administration gave instructions on June 20, 1919, that all car forces be increased to the full standard measure of 48 hours per week and that additional shifts be worked where the additional employees could be obtained and where they could be economically used. The showing naturally to be expected from the putting into effect of these instructions was hampered in July by the intervention of practically a double holiday, and, of course, was temporarily prevented in August by the strikes of a large number of shop employees. Conditions having now been restored to normal, it is expected that these instructions will promptly show a most favorable result. Further than this, the Railroad Administration instructed on August 16, 1919, that all car forces be put on a basis of

54 hours per week. It is believed that this instruction will result in a marked improvement, also in the monthly repair of a much greater number of cars than the normal number and will steadily increase the number of cars actually available for service as compared with preceding years.

"In addition to this, the Railroad Administration is rapidly getting the benefit of the service of a large number of new cars constructed during federal control, but whose introduction into service was postponed on account of inability to agree with the railroad corporations as to the acceptance of the cars. This inability has been overcome. Between August 1 and September 6, 23,564 of these cars have been put into service, and they are now coming into service under the spur of recent instructions at the rate of over 900 per day."

Efforts to Improve Car Supply Situation

Director General Hines has authorized the following statement relative to the car situation in the United States:

"The Railroad Administration is fully alive to the importance of the car supply situation in the United States and is handling the matter energetically. Instructions have been issued to all the regional directors urging them to bend every effort:

"1. To speed up road and yard movements;

"2. To secure heavier loading of equipment;

"3. To establish and maintain complete and accurate yard checks;

"4. To reduce the number of bad order cars;

"5. To make prompt delivery to connections;

"6. To effect early deliveries at freight houses and teamtracks; and

"7. To expedite the movement of grain cars in terminals.

"Instructions have also been issued for the establishment in each important terminal of a committee of officers of the Railroad Administration whose duty it will be to study and expedite the movement of cars, empty and loaded, in their respective terminals.

"Every effort is being made to speed up the construction of the 100,000 freight cars ordered by the Railroad Administration last year and to place in service such of these cars as are still in storage. The Railroad Administration has decided to place all these cars in service irrespective of whether or not the allocations are accepted by the railroad corporations.

"On September 6, 1919, 54,068 of these cars were completed and in service and 17,469 were in storage awaiting lettering and numbering.. The total number of cars in storage was reduced from 34,245 on August 1, 1919, to 17,465 on September 6, 1919. During the week ending September 6, cars in storage were stencilled and placed in service at the rate of 616 per day. New cars at the rate of 218 per day were completed and placed in service, thus making a total of 834 cars per day placed in service. All available railroad shops are being used for the purpose of supplementing the work of the car shops in stencilling cars in storage. The total number of these cars placed in service daily will increase during the next few weeks."

W. T. Tyler, director of the Division of Operation; Edward Chambers, director of the Division of Traffic, and Max Thelen, director of the Division of Public Service, have been appointed a committee to investigate all phases of the car supply situation in an effort to improve it, and it is understood they will confer with a large number of shippers who have been making complaints, including a committee appointed by the National Industrial Traffic League at its recent meeting at Pittsburgh, which sent a telegram to the director general urging an improvement in service and asking an opportunity to consult with him at Washington. Mr. Thelen attended the league meeting and made a report of it to Mr. Hines.

Loss and Damage Freight Claims Reduced

The efforts of the central administration at Washington, and of the regional directors, federal managers and freight claim agents to establish uniform practice and prompt settlements of loss and damage freight claims are showing very gratifying results, according to a statement issued by the Railroad Administration.

The Railroad Administration has caused to be compiled figures with respect to the unsettled loss and damage freight claims on roads under federal control, from which it is noted that on April 1, 1919, there were 806,707 such claims unsettled, whereas on August 1 this figure had been reduced to 519,316—a decrease of 287,391, or 35.6 per cent., in the number of unsettled claims.

Of the total number of outstanding claims on April 1, 1919, 363,476 had been outstanding four months or over. On August 1, this figure had been reduced to 218,424, a decrease of 145,052, or 60.1 per cent.

Statement by regions of loss and damage freight claims unsettled and on hand over four months:

	Unsettled Claims								
Region—	April 1, 1919	May 1, 1919	Decrease	June 1, 1919	Decrease	July 1, 1919	Decrease	August 1, 1919	Decrease
Eastern	261,716	231,970	29,746	200,431	31,539	176,220	24,211	162,433	13,787
Allegheny	129.013	113,772	15,241	105,413	8,359	97,686	7,727	91,309	6,377
Pocahontas	9,158	8,419	739	7,245	1,174	5,093	2,152	4,757	336
Southern	133,724	121,174	12,550	110,346	10,828	95,844	14,502	80,910	14.934
Northwestern	141,204	129,617	11,587	118,247	11,370	104,518	13,729	93,469	11.049
Central Western	88,210	79 073	9,137	71,883	7,190	62,366	9,517	55,538	6,828
Southwestern	43,682	38,038	5,644	35,569	2,529	33,945	1,564	30,900	3,045
Total	806,707	722,063	84,644	649,074	72,989	575,672	73,402	519,316	56,356
	Over Four Months Old								
Eastern	121,892	108,226	13,666	94,059	14,167	80,641	13,418	71,909	8,732
Allegheny	58.765	53,134	5,631	51,315	1,819	46,154	5,161	40,011	6.143
Pocahontas	3,043	2.691	352	2,695	596	1,561	534	1,291	270
Southern	71,927	55,361	16,566	52,636	2,725	47.235	5,401	37,886	9,349
Northwestern	65,076	53 874	11,202	52.368	1,506	47,600	4,768	43,131	4.469
Central Western	31,598	25,905	5,693	24,123	1,782	20,819	3,304	17,655	3,164
Southwestern	11.175	9,834	1,341	8,076	1,758	7,575	501	6,541	1,034
Total	363,476	309,025	54,451	284,672	24,353	251,585	33.087	218,424	33,161

Traffic Committees Directed to Clear Their Dockets

As another step in preparation for the wind-up of the affairs of the Railroad Administration, Directors Chambers and Thelen, of the Divisions of Traffic and of Public Service, have sent letters to the chairmen of the Railroad Administration's territorial freight traffic committees, stating that it is desired so far as possible to clear the dockets of the various committees of pending subjects prior to the end of federal control. With this end in view, instructions are to be issued to all committees to discontinue immediately all investigations with a view to uniformity of rates, minimum weights, rules and practices because considerable time is being spent on such work which should be employed in disposing of the subjects on the dockets. This is not intended

to apply to general investigations already specifically authorized and upon the docket. All committees are directed to review the subjects now on hand to determine whether with the assistance available it will be possible to dispose of them prior to the end of federal control. If the force available is not sufficient, request for the necessary help should be made immediately. In order to save time it is also suggested that the committees may be subdivided into sections for conducting hearings.

Earnings and Expenses for July

The Operating Statistics Section of the Railroad Administration has published figures covering the financial results of operation for the month of July for all Class I roads in federal operation. These comprise 232,004 miles of road, or 97 per cent of the total of 240,177 miles of road federally operated.

The condensed income statement shows:

	Month of July		Increase or decrease		Seven Months Ended July 31		Increase or decrease	
	1919	1918	Amount	Per cent	1919	1918	Amount	Per cent
Operating Revenues	$449,694,136	463,958,521	d 14,264,385	d 3.1	2,774,193,441	2,519,925,384	254,268,057	10.1
Operating Expenses	352,957,237	312,701,610	40,265,627	12.9	2,409,687,708	2,102,951,292	306,736,416	14.6
Net Operating Revenue	96,726,899	151,256,911	d 54,530,012	....	364,505,733	416,974,092	d 52,468,359	....
Taxes, Rents, etc.	20,057,422	14,209,806	5,847,616	....	130,839,909	128,673,886	2,166,023	....
Net Operating Income	76,669,477	137,047,105	d 60,377,628	....	233,665,724	288,300,106	d 54,634,382	....
Operating Ratio	78.5	67.4	11.1	....	520,470,832	520,470,832	.....	....
	.....	.....	.....	....	286,805,108	232,170,726	54,634,382	....
	.....	.....	.....	....	86.9	83.5	3.4	....

d Indicates decrease.

One-twelfth of the annual rental due the companies covered by the report amounts to $74,352,976, so that the net profit to the government for the month was $2,316,501 for these properties.

In making comparison with last year it should be noted that while the freight and passenger rates are on substantially the same basis in both years, the wage scale of July, 1919, is substantially higher than that of July, 1918.

The comparison between the seven months periods is substantially affected by the fact that the rate increases, approximately 25 per cent, which were in effect this year, became effective for passenger and freight traffic respectively the middle and latter part of June, 1918.

Mechanical Committee

At a meeting of the Committee on Mechanical Standards last week a special committee consisting of A. W. Gibbs, H. L. Ingersoll and John Purcell was appointed to consider the elimination of angle cocks from the air brake train line. A report and recommendation will be made to the committee at its next meeting in November. The committee also made some minor changes in the proposed standard designs for caboose cars, which, as amended, will be submitted to W. T. Tyler, director of the Division of Operation, for final approval.

Car Shortage May Result in Higher Demurrage Rates

The numerous complaints being received by the Railroad Administration of car shortages in various parts of the country have aroused interest in the question of whether or not it would be advisable to return to the plan of high demurrage rates which was in effect during the war. One of the first things that Director General McAdoo did last year was to raise demurrage rates, almost over night, to a scale ranging up to $10 per car per day. After the armistice shippers besieged the Railroad Administration with demands for a reduction and some time ago Director General Hines reluctantly consented to such a step but he intimated at the time that in the event of a car shortage it might be necessary to put the high rates back in order to reduce the amount of car detentions by shippers and consignees and it is understood that such a move is now being considered. By September 1 the huge freight car surplus that existed earlier in the year had been converted into a net shortage, whereas on September 1, 1918, while the country was still at war, there was a net surplus of 36,000 cars. This is taken as an indication that many of the measures of war time efficiency, in which the shippers co-operated last year, have lost part of their effectiveness. It is now more difficult to induce shippers to load cars to capacity, particularly since the Food Administration's power to compel heavy loading has been given up, and it is no longer regarded as pro-German to hold a car under demurrage for several days awaiting loading or unloading. The California Vegetable Union has been burning up the wires in asking Congressmen to get its members a better supply of refrigerator cars, claiming that they are being discriminated against when the cars are being used for other purposes, which they consider less essential. The Railroad Administration has arranged to furnish 300 to 400 cars a day to California for fruits and vegetables but in reply to the protests point out that under a maximum demurrage rate of $5 a day cars are frequently held at eastern terminals during the time that would be required to get them back to California for another load.

From the Chicago Post

"One At a Time, Please, Gentlemen"

New Developments In Car Lighting Save Money*

Extensive Investigations Have Brought About Improved Methods of Regulating Electrical Equipment

By E. Wanamaker
Electrical Engineer, Chicago, Rock Island & Pacific

A RESUMÉ OF THE HISTORY of railway train lighting compiled from the records available shows that great strides have been made in the art since the days of the first experiments. To one Thomas Dixon, driver of the coach "Experiment" on the Stockton and Darlington Railway, in England, in 1825, is given credit for having first used artificial light in a railway car. He was a man of generous motives, and having in mind the comfort and convenience of his passengers on dark winter nights he placed a penny candle on a table, also provided by him, in the center of the car. From this humble beginning railway train lighting has grown and kept pace with the development of illumination in other fields and with the growth of other transportation facilities. Today, electric systems for lighting cars cost hundreds of dollars per car and a large number of employees are necessary to provide and maintain this service.

A review of the progress made in developing car lighting shows it is divided into periods of approximately 25 years for each illuminant used. The period of candle light lasted from 1825 to 1850, when oil lights were introduced. Oil lighting in turn gave away to gas in 1875, and gas continued to be the most generally used illuminant until about 1900, when the application of electricity to car lighting began to receive wide attention by railroads, and in this country at least is now the system generally preferred for new equipment.

Straight Storage

The earliest electric system of which we have a record was a straight storage system used on the London, Brighton and South Coast railway in 1881. Primary batteries were also tried in France in 1885 on cars operating between Paris and Brussels. At about this same time straight storage lighting was tried by the Pennsylvania Railroad and the Boston & Albany in the United States, and on the first-mentioned road this was for many years the electric system most used. Such a system requires an expensive charging plant at each terminal. Its main disadvantage is the limited time which a car can be kept in service without being held for charging and the liability of light failure due to batteries becoming discharged when trains are delayed or held from regular charging terminals. Another disadvantage arises from the fact that cars equipped with this system cannot be operated on branch lines or at isolated points where charging facilities are not available.

The "Head-End" System

"Head-end" equipment was first tried in 1887, when it was installed by the Pullman Palace Car Company in one of its composite cars operating between Jersey City, N. J., and St. Augustine, Fla., in the Atlantic Coast Line Special. In the same year, the Pennsylvania Limited was similarly equipped, and in 1888 the Chicago, Milwaukee & St. Paul also had a train equipped in this manner.

The head-end system was first tried out with a generator in the baggage car and no batteries, but due to frequent light failures caused by the trains being parted and the locomotives being cut off at division points, it was found necessary to place batteries on the first and last cars of each train so that if a train was parted to cut out or cut in cars, each section would have light. In some cases batteries were applied to each car. This greatly increased the time that lights could be depended upon in case of the generator unit being out of service and also made it possible for each car to have light when cut out.

Various means are used to control the lamp voltage and battery charging rates. Each road seems to have developed a system to meet conditions as they exist on its particular lines, which has resulted in several different schemes of wiring, battery charging and operation, all of which give results more or less satisfactory.

An axle-driven head-end system has been designed to furnish power for lighting the train and charging the batteries from a single unit, the batteries being distributed throughout the train, as for instance, one set in the baggage car, one in the observation or dining car, and sometimes one in the middle of the train. The number of batteries used and their location are governed by local conditions.

While this system is not liable to light failures, due to lack of steam, it has the same disadvantages as the steam driven, head-end systems, namely, that cars not equipped with batteries are dark when cut out of a train, that they are not interchangeable when operating on foreign lines, and are liable to light failure due to small battery capacity when trains are delayed or tied up. It would, therefore, seem that this system is unsatisfactory for universal operation.

For suburban and branch line service, the straight head-end system without any auxiliary battery has been found very economical and successful. The present practice for this class of service is to mount the turbo-generator on the locomotive in a manner similar to that used for mounting headlight turbines, the generator being of sufficient capacity to furnish current for the headlight and cab lamps and the maximum number of cars usually assigned to this class of service.

A three-wire system of wiring and standard train line connectors are used for making connections between cars and locomotive. No doubt, in the near future this system will be used more extensively on branch lines due to the low first cost, low maintenance cost, and the ease with which the installation can be made to existing power and rolling stock. All cars are similarly wired, and the number of cars in a train is only limited to the capacity of the turbo-generator and train line wires. Low first cost results from the simplicity of the car wiring system, which includes only a train line circuit and one lamp circuit connected to it with a fused knife switch in a steel switch box.

Credit for the earliest attempt at lighting a train with axle-driven equipment is given to the London Brighton and South Coast Railway, on which a crude system was tried out in 1883. Since that date development has gone on unceasingly, and individual axle-driven systems are now most generally used for train illumination in this country.

After years of test only one form of transmission for driving the generator is in general use. Various forms of belts and direct drive have been used, but due to the variable relation between the axle pulley and the armature pulley, and the climatic conditions, the rubber belt up to the present has been found to meet the requirements most economically.

* Abstract of a paper presented at the opening meeting of the Western Railway Club, Chicago, on September 15.

Some of the first generators were suspended from the car body, others were mounted on the truck. Much time has been spent in improving generator suspensions, which has resulted in the elimination of many wearing parts, thus simplifying and reducing the maintenance costs.

The body hung suspension is favorable to the maintenance of the generator and possibly to the car truck. With it the belt is considerably longer than with the truck type suspension. Therefore, the belt life must be increased in the same proportion as the length is increased in order to keep the belt cost per car mile the same. Much is claimed for both types of suspensions, each having its possibilities, the conditions under which they operate and the condition in which they are maintained being important factors.

An important point in connection with axle lighting is the proper application of axle pulleys. If they are not properly applied the belt life will be short and the maintenance cost high. In a great many cases axle pulleys are applied to eccentric axles which should have been turned to insure a perfect pulley seat. In some cases pulleys are applied with improper pulley bushings. Eccentric pulleys and small belt clearances over the brake beam comprise two of the main causes of short belt life. Farsighted mechanical men on some roads have made provisions for successful and economical operation of the belt drive by using turned axles or by turning a pulley seat on hammered axles to insure concentric pulleys. Also in some cases special brake rigging is being used to give ample belt clearance.

Maintenance

To secure good service from the entire equipment at a low operating cost a standardized systematic method of maintenance must be used. With the present design of equipments the belt cost constitutes the second largest single item of expense. Records should be kept from which individual belt mileage can be computed. From these records any car using an excessive number of belts will be noted and steps taken to correct any defects found.

At the periodical shopping of cars the electrical equipment should be thoroughly overhauled and placed in a first-class condition, all worn parts being removed and defects corrected. If this is done thoroughly heavy repairs will seldom be found necessary between the shopping periods.

A systematic inspection of the generator and suspension should be made each trip to see that all parts are in good condition. Once each year the generator should be dismantled and all parts thoroughly cleaned, fields and armature painted with insulating varnish and new grease applied to ball bearings.

Train-Line Facilities and Fixtures

On the majority of railroads, facilities are provided for making connections from car to car so as to provide light in a defective one. It is the almost unanimous opinion of car-lighting engineers that with the present equipment, facilities for train-line connections are essential if light failures are to be avoided, connectors being especially desirable for the protection of mail cars.

The tendency in fixtures is toward simplicity of design to harmonize with the interior construction of the car. Center-deck lighting seems to be generally preferred with a sufficient number of units, properly shaded, to give uniform distribution. Enamel finishes the same color as the car walls or ceiling at the point where the fixtures are located are most used, but there is reason for believing that in time the roads will again prefer metal finishes, as these, when properly applied to fixtures of pleasing design, help to improve the interior appearance of the car. In recent years statuary bronze has been the metal finish most used.

A matter of great importance is that of careful selection and design upon which depends effectiveness of the installation, both as regards light distribution and appearance. These various questions involve a study of intrinsic brilliancy, intensity, distribution and color.

Batteries

There are two distinct types of storage battery in use in car lighting service at the present time, the lead acid battery and the nickel-iron alkaline battery. Of the lead batteries there are two general types of plates, the Plante and the Faure. For a given output, the Plante is more costly, more bulky, and heavier than the equivalent pasted plate type. Thus far this type is more durable and better able to withstand the operating conditions incidental to car-lighting service. It is the type most used in car-lighting service, but some car-lighting engineers claim that the advantage it has had over the Faure type is decreasing with the increased cost of labor and improved methods for battery protection. The nickel-iron alkaline battery is of comparatively recent development and is radically different from the lead acid battery. It is light weight and mechanically rugged.

The cost of maintaining batteries constitutes the largest single item of expense in the maintenance of car-lighting equipment, and the entire development of regulators or apparatus for battery protection while the car is enroute has been made with a view of prolonging the life and reducing the cost of maintenance. However, good standard practice for handling batteries is also essential if this cost is to be kept within reasonable limits.

With the present design and construction, the cleaning period is comparatively short. By a change in design the same capacity could be maintained and yet the space for sediment could possibly be doubled, thus greatly prolonging the cleaning period, insofar as it is based on this particular feature. Some manufacturers are now endeavoring to produce a battery which will not have to be removed from the car for cleaning during the life of the positive element, or at least to prolong the period of time between the cleaning far in excess of present practice.

Battery Protection

The control of the generator output while the car is enroute has offered one of the most difficult problems to be overcome, since the life of battery and lamps depends to a large extent upon regulation.

Without the proper protection, the battery life may be only a third of what it should be. In a similar manner also the cost of maintaining the generator depends upon the regulation.

The duties of the regulator for car-lighting service are: (1) To connect the battery to the generator at the minimum speed and voltage for which the machine is designed to operate and to disconnect the battery when the speed and voltage fall slightly below the first mentioned value; (2) to provide a variable voltage to charge the battery at the proper rate, which is determined by the state of charge, and at the same time carry the lamp load, in the event it is turned on, up to the capacity of the generator; (3) when the battery has attained a full state of charge, the regulating means must prevent further charge thereafter, leaving the generator capable of supplying current to lamps or other translating devices; (4) to provide constant voltage on lamps while the car is in motion or at rest.

There are two types of regulators in general use, designed with the view to meet these requirements: First, ampere hour meter control; second, potential control. The first mentioned method charges the battery by starting at a high rate, which is gradually modified to a predetermined lower rate, and when a predetermined number of ampere hours have been put into the battery as indicated by the meter, the potential is reduced by the regulator sufficiently to prevent further charge. With this method it is necessary, for proper battery protec-

tion, to maintain the ampere hour meter in step with the state of charge of the battery.

It is apparent that the proper battery protection depends not only on the proper functioning of the meter itself, but also upon the battery remaining in normal condition in order that the battery and meter may remain in step with each other. Owing to battery characteristics and operating conditions, the meter does not always indicate the true state of charge.

In the second method of charging heretofore referred to as "potential control," inherent characteristics of the battery are taken advantage of to govern the charging rate, and when the battery has attained a full state of charge, to prevent further charge thereafter. With most potential control equipments, a current limit feature is embodied with the potential regulator to hold the maximum current to a value consistent with the generator capacity.

Many forms of potential control equipment have been placed on the market, most of which operate at potentials such that in the course of charging, the battery is caused to gas. In 1913 and 1914, efforts were made by the Rock Island to operate equipment at a maximum voltage of 2.3 volts per cell. At the beginning the experiment was found to be a failure, as in many instances cars on most runs arrived at terminals with the batteries in a decidedly discharged state. There were, however, cars in fast main-line service on which the batteries remained in a full state of charge and at the same time were not being overcharged, the batteries requiring flushing on an average of about every six months. This was encouraging and led to investigations which developed that the failures were not due to the fact that the low voltage would not keep the batteries charged, but resulted from the fact that this voltage of 2.3 volts per cell was not attained except at very high train speeds. In one test covering a period of five hours, the equipment maintained full voltage and load for less than 10 per cent of the running time. On the face of the evidence it looked as though a larger generator designed to give full voltage and load at a lower train speed would be required, but fortunately after further investigation it was found that with certain refinements in the regulating device, a lower cut-in speed could be secured.

A test made with an improved regulator with the same generator that was used on the previous test and over the same run, showed the following comparison:

Full load—Old regulator—35 miles an hour.
Full load—Improved regulator—24 miles an hour.
Full load time in 5 hours—Old regulator—10 per cent.
Full load time in 5 hours—Improved regulator—41 per cent.
In this case the capacity of the unit was increased 300 per cent.

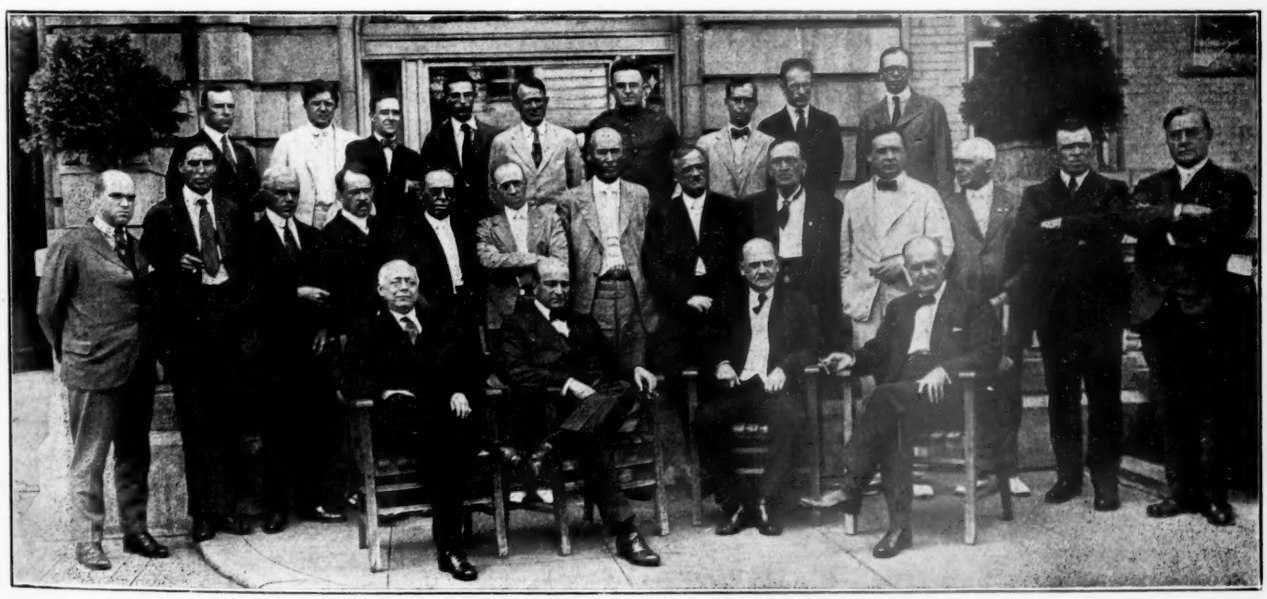
The net results realized from the use of the improved regulator are increased capacity of the unit due to obtaining generator output at low train speed, and increased battery life, which is brought about by the following:

(A) The work imposed upon the battery of furnishing energy for the lights is greatly reduced by the increased working time of generator, and also by the fact that the current for the lights is supplied by the generator, and not by the battery, at all times after the generator cuts in.

(B) The battery is charged at the proper rate to prevent gassing and overheating with the attendant ill effects.

(C) The battery is protected from overcharge and the forming away of the reserve lead in the battery elements.

Even though only a part of the Rock Island equipments have been improved, the cost of operation and maintenance per car per month has not increased, in spite of the increased cost of labor and material, and a very large part of the savings is attributed to the better protection provided for the battery.



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The Conference of "Leaders of National Thought," Which Met at Glenn E. Plumb's Call in Washington, August 9 to 11

Seated, Left to Right: Edward W. Bemis, of New York, Economist; Henry J. Allen, Governor of Kansas; Judge Walter Clark, Chief Justice of the Supreme Court of North Carolina; E. F. Dunne, Ex-Governor of Illinois.

Standing, Second Row, Left to Right: Walter L. McMenimen, Deputy President Brotherhood Railway Trainmen; R. S. Sexton; J. A. H. Hopkins, Chairman of the Executive Committee of the Committee of Forty-eight; Morris L. Cook, Consulting Engineer of Philadelphia; James J. Forrester, Grand President, Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees; J. F. Anderson, Vice-President, International Association of Machinists; A. B. Garretson, Advisor, Order of Railway Conductors; Glenn E. Plumb, Counsel, Organized Railway Employees of America; H. E. Wills, Assistant Grand Chief, Brotherhood Locomotive Engineers; Edward Keating, Manager Plumb Plan League; P. J. McNamara, Vice-President, Brotherhood of Locomotive Firemen and Enginemen; Frank P. Walsh; William M. Clark, Vice-President, Order of Railway Conductors.

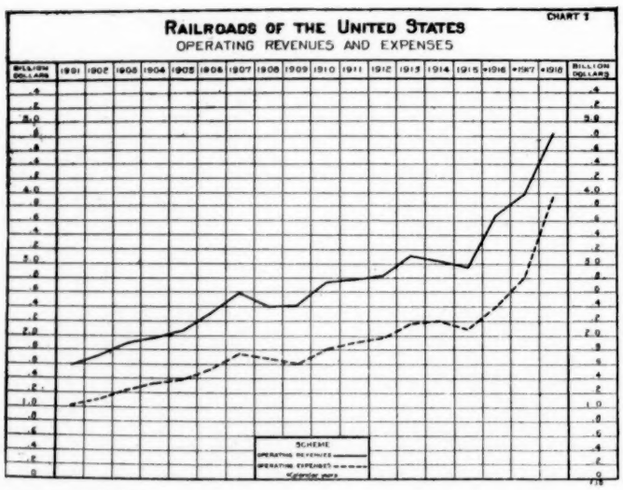
Back Row, Left to Right: Patrick Lee; C. C. Dill; M. E. Pew; Ray McClung; Frederic C. Howe, Commissioner of Immigration, Port of New York; Capt. O. S. Beyer, Jr.; Basil Manly, Former Joint Chairman of the National War Labor Board; Lincoln Calcord, and H. B. Brougham.

The Logarithmic Chart in the Analysis of Railroad Operations

By F. J. Deesen

THE BENEFITS derived from the use of graphic charts in analyzing statistics relative to railroad operation have resulted in their general adoption, not only in the United States, but throughout the civilized world. There are various forms of charts employed, depending upon the subject matter discussed, the most common of these being that in which equal distances are scaled off horizontally to represent time (years, months, etc.) and equal distances scaled off vertically to represent amounts (dollars, tons, miles, etc.). Chart I is an illustration of this form. The chart is divided lengthwise into 18 equal segments to represent each of the years from 1901 to 1918, and vertically into equal segments each equivalent to $200,000,000. The operating revenues are plotted and connected with a solid line, and the operating expenses plotted and connected with a broken line. The distances between the solid line and the broken line show the net earnings.

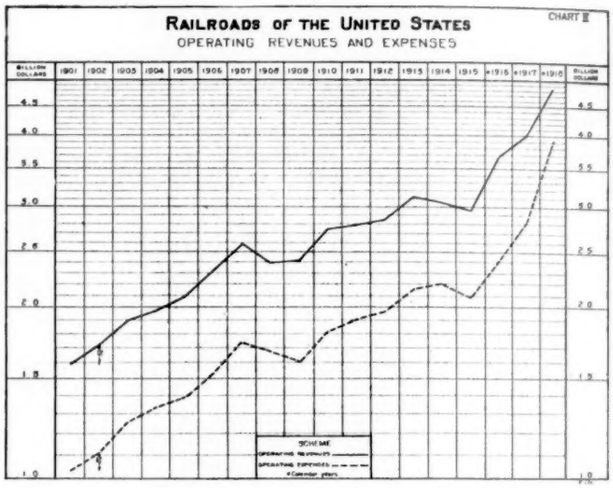
That the general trend of affairs may be more readily as-



certained from a chart like this than from a column of figures is self-evident. A glance at the chart will show the tremendous increase in operating revenues from about $1,600,000,000 in 1901 to over $4,800,000,000 in 1918, accompanied by a tremendous increase in operating expenses from $1,000,000,000 to nearly $4,000,000,000.

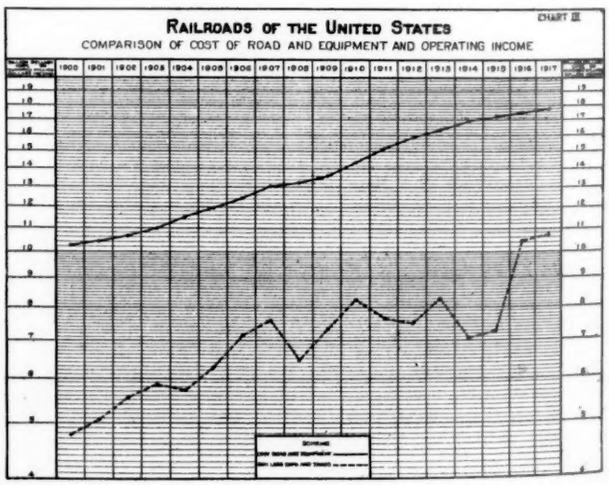
There is, however, one deplorable defect, in a chart of this nature, in comparing two sets of figures, as is done in this instance. From all appearances it seems that since the two lines do not come materially closer together, the roads are being operated just as efficiently in 1918 as they were in 1901, but consideration must be taken not as to whether expenses have increased the same or less in actual dollars as operating revenues, but whether expenses increased in the same or less *proportion* as revenues; in other words, the main question is, are the roads receiving the same proportion of their gross earnings in net as they were previously. From Chart I we cannot readily ascertain this. Of course net earnings could be plotted on this chart, but it would still fail to show whether they increased at the same rate as gross.

To overcome this defect, the logarithmic chart may be employed. Chart II illustrates the same figures plotted on the logarithmic scale as Chart I. It will be noted that the charts are divided in the same way in representing the years. The vertical scale on Chart II, however, employs the distances as used on the slide rule, so that an increase of any per cent on one part of the chart will show the same curve as an increase of the same per cent on another part. For instance, it will be noted that the distance from 1.0 to 2.0 is the same as that from 1.1 to 2.2, from 1.2 to 2.4, from 2.0 to 4.0, etc., each of which represents an increase of 100 per cent; that the distance from 1.0 to 1.5 is the same as that from 1.6 to 2.4, from 2.0 to 3.0, etc., each of which represents an increase of 50 per



cent; and so on for any percentage of increase. The same may be said of decreases.

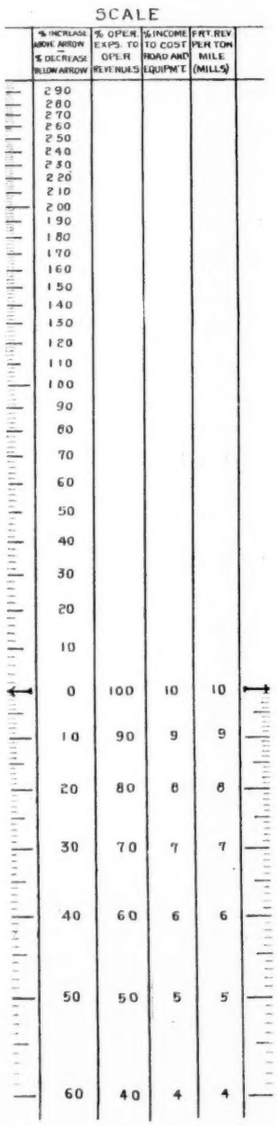
By plotting the logarithmic distances on a separate sheet of paper, scaling off the percentages of increase and decrease, as is done in the first column of the accompanying diagram, and applying this scale against the figures plotted on the chart, the percentages of increase or decrease can be easily read without any further figuring. For instance, placing the ar-



row of the scale on the 1901 operating revenues, 1.59, and reading straight up to 1902 operating revenues, 1.73, as designated by the arrow on the chart, we find that they have increased nearly 9 per cent; placing the arrow of the scale on 1901 operating expenses and reading straight up to 1902 operating expenses, we find that they have increased a little over 8 per cent. If we do the same thing with the figures plotted for 1917 and 1918, it will be found that an increase of a little over 21 per cent in operating revenues has been accompanied by an increase of over 40 per cent in operating expenses. Percentages of decreases may be read in like man-

ner by placing the arrow on the figure plotted for one year and reading straight down to that plotted for any subsequent year. In this way any year's operations may be compared with any previous year's operations. Comparing 1918 figures with those for 1901, operating revenues increased slightly less than 205 per cent, and operating expenses increased over 280 per cent.

Further use of the scale may be made in determining the ratio between the operating revenues and operating expenses of any year by applying the simple rules of division of the

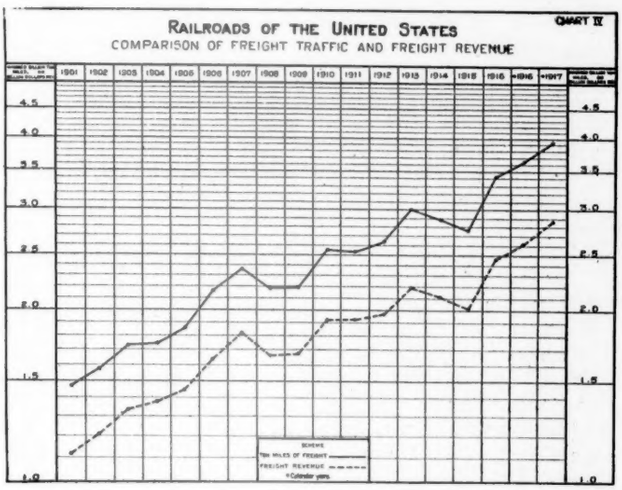


slide rule. If we place the arrow upon 1901 operating revenues and read down to the operating expenses of that year, it will be found the scale reads in the second column nearly 65 per cent, wihle doing the same with 1918 figures the scale shows a ratio of over 81 per cent; in other words a greater proportion of the gross earnings are going towards meeting expenses in 1918 than in 1901.

The logarithmic chart, therefore, shows both the rate of increase of two quantities and the ratios between them. A further comparison of Chart I and Chart II will disclose further advantages of comparing two sets of figures by means of the logarithmic chart.

Chart III is a comparison of the cost of road and equipment and operating income. The same scale may be used to read percentages of increase and decrease. Since the cost of road and equipment is shown in billion dollars and income in hundred million dollars, in order to determine the ratio between the two, the figures in the second column of the scale should be divided by 10, as is shown in column 3. Using the scale, then, the ratio of operating income to cost of road and equipment in 1900 is slightly over 4.6 per cent as against 6.0 per cent in 1917.

Chart IV gives a comparison of freight traffic and freight



revenue. The percentages of increases and decreases may be ascertained in the same manner as in Charts II and III. The figures in the fourth column of the scale will give the freight revenue per ton mile in the same way as the ratios were ascertained in Charts II and III.

It is impossible to enumerate all of the possible different comparisons that can be advantageously made on the logarithmic chart, such as that between locomotive miles and train accidents, etc.

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So Acute Is the Housing Problem in England That the Owner of This Ex-Railway Car Has Been Overwhelmed With Applicants Who Desire to Rent It

Roadmasters Hold Successful Meeting At Chicago

Large Attendance and Good Reports and Papers Characterize Thirty-seventh Annual Convention

THE VICTORY OR 37th annual convention of the Roadmasters' and Maintenance of Way Association was held at the Auditorium hotel, Chicago, on Tuesday, Wednesday and Thursday of this week. The attendance was the largest in the history of the association, over 600 roadmasters and higher maintenance of way officers being present. This attendance was the result in large measure of the active support of the United States Railroad Administration, instructions having been sent to all federal managers to arrange for as many roadmasters and higher maintenance officers to attend this meeting as could be spared from their work. As a result men were present from all part of the United States and also from Canada.

The officers for the past year were as follows: President, J. B. Oatman, division engineer, B. R. & P., Du Bois, Pa.; first vice-president, J. W. Powers, supervisor, N. Y. C., Rochester, N. Y.; second vice-president, W. P. Wiltsee, principal assistant engineer, N. & W., Roanoke, Va.; secretary, P. J. McAndrews, roadmaster, C. & N. W., Sterling, Ill.; and treasurer, C. King, supervisor, L. I., Jamaica, N. Y.

The convention was called to order at 10 o'clock Tuesday morning by Mr. Oatman. In his opening remarks he referred to the difficulties which have confronted the association during the past year, particularly because of the feeling that has prevailed among some members that the association should participate in discussions of wage matters and seek to secure more consideration for roadmasters. Mr. Oatman stated that the officers had decided that the association should adhere to the purpose for which it was originally established, namely, the improvement of maintenance practices.

Maintenance of Passenger and Freight Terminals

In large terminals, sections should be established so that yard gangs will be of a uniform size of 15 to 18 men, with a foreman and one assistant foreman. Main line gangs should not be as large as those employed in yards, as the work must be done to a higher standard and needs closer supervision. Section limits should be worked out by the supervisor or roadmaster on the equivalent mileage basis, giving due consideration to traffic and other local conditions. In terminals a regular force of laborers should be employed throughout the year to take care of regular maintenance work, with extra gangs for such work as rebuilding ladder tracks, laying rail and other special work.

In large terminals, a regularly assigned work train, with a work train gang, is necessary for the economical handling of material and supplies. The work train should have a designated headquarters, and a track or tracks assigned to work train equipment and maintenance of way material. Cars so placed can be obtained and handled by the work train without delay. With our present workday of eight hours and limited forces, it is necessary that work trains be given more opportunity to do their work than in former times.

The policing of yards is a problem of ever-increasing seriousness and varies with the different yards and kinds of freight handled. Cleaning yards with a work train with flat cars and a gang of 30 men will cost approximately $15 per thousand feet of track. Such tracks as station, coach yards and repair tracks should be cleaned daily by regularly appointed attendants, and the cleaning put in a rubbish car, if one can be placed conveniently. In yards where the daily accumulation is heavy, an incinerator plant is advisable. Much can be accomplished in policing through cooperation. The cleaning of yard tracks, where the condition can be prevented, constitutes one of the greatest wastes of money in the maintenance of way department, and should be called to the attention of the management in order that necessary action be taken to prevent the continued leakage.

In heavy classification yards it is generally difficult to obtain a track to make repairs, and for this reason repairs are generally made out of face. Arrangements are made for a designated track to be taken out of service for the working period of the day; a car with necessary supplies, such as ties, angle bars and other material is set on the track. The day's work is carried through and the track is restored to service during the night. Where a sufficient force is available, the track can be worked from both ends in the same manner.

In such yards the rebuilding of ladder tracks is the most difficult work in the maintenance of terminals. In doing this work it is necessary that everything possible be done in advance of breaking the track. All material must be checked, all rail cut and drilled for lead rails, all switch ties properly marked, so lengths can be identified at a glance. Where conditions permit, all material should be placed on the ground opposite the ladder. Where this is not consistent, all material should be assembled on cars, so loaded that it can be unloaded as used. Arrangements should be made to suspend operation over the ladder for a period of four hours, during which time a gang of 40 men experienced in laying switches can renew three switches. All old material should be removed to a place of safety on the same day the work is done. On ladder tracks, where the use of the track cannot be given up for any definite period of time, it is necessary to renew the rail on the old ties, a switch at a time, and the ties singly. This is very expensive and it is difficult to accomplish good work.

L. M. Denny, supervisor C. C. C. & St. L., chairman.

Discussion

Several speakers objected to any reference to the Railroad Administration's policy toward reduced maintenance expenditures. However, a motion to exclude reference to "the past six months of retrenchment" in the first paragraph was lost, although one relative to "limited forces" in the paragraph on work train service was sustained. The second paragraph elicited some criticism with reference to the use of smaller size gangs on main line work, but after it was explained that this referred to main lines *within terminals* and had no application to lines outside, a motion to approve this paragraph without change was passed.

In discussing the paragraph on work train service several speakers advocated the use of a motor truck for the delivery of materials about an intensively operated terminal, since the truck could be used on city streets without any of the delays incident to the delivery of material by work train on congested tracks. The committee was instructed to revise the paragraph so as to make proper reference to the advantage of motor truck service under certain conditions.

In the matter of eliminating the sharp angle frogs in the reconstruction of yards a number of members called attention to the fact that this was rarely possible. One speaker called attention to the opportunity for reducing the curvature of a

turnout having a given frog angle by continuing the turnout curve to the switchpoint and the point of frogs through the use of specially constructed frogs and switch rails. Some objections were also raised to the use of manganese tips on switches and considerable contradictory testimony was brought forth without leading to any definite conclusion. Several eastern men gave detailed information on the use of switchrail housings in the stockrails made by a special planer.

The use of a locomotive crane with a clamshell bucket was advocated for cleaning yards. As carried out in practice, all waste material is shoveled into the space between tracks and then picked up by the crane.

Highway Crossing Construction

Only a few roads have yet adopted such excellent substitutes for lumber as asphalt, road oil, macadam, etc., for farm, street and highway crossing construction, while concrete is not a novelty on railroads, as for years past its value and usefulness have been developing. A report from one supervisor's division shows that it required 53,678 ft. of lumber, 3,226 lb. of crossing spikes and a labor charge of $5,642.96 to maintain the public and private crossings on his territory for one year, the cost of the plank alone being $1,717.70. If this amount of lumber can be conserved on one division, assuming that it requires 512 ft. for one single track crossing, or twice the amount for double track, and assuming also that there are 50 or more highway crossings on each of 3,000 supervisors' divisions on the railways of the country, the use of some other material than lumber would mean the conservation of 76,800,000 ft. b. m., amounting to $2,457,600. And this does not include farm crossings or streets sometimes planked solidly from one side to the other of six or more tracks.

Since a crossing must be kept up continually, the method of maintaining it should be simple as to be grasped readily by the average workman. To be practical, the work should be performed with the least possible equipment and this should be of such character as will always be at hand. To be economical, the expense must be within reason and not exceed that of other methods and materials that are used for work of like nature producing like results.

The committee recommends that as far as possible all rail joints be eliminated in road crossings; that good drainage be installed, and that all road crossings in high speed tracks be made of crushed stone of standard size, mixed either with good road oil, bituminous macadam, asphalt or other good substitutes for lumber. In parts of the country where there is considerable frost and where tracks heave, the sealing of the crossings with these substitutes will keep out the moisture and frost and eliminate the heaving of tracks to a considerable extent, also the heaving of crossing planks, which is a source of danger, is eliminated. On slow speed tracks and where heavy trucking is done in yards, etc., tracks should be paved.

Excellent results have been obtained with crossings constructed of good clean crushed stone (ballast size), from a depth of 2 in. below the bottom of the ties up to the level of the under side of the head of the rail, and extending 2 ft. outside the rails, rolling or tamping it thoroughly, the rails having first been painted with hot asphalt below the under side of the head, and a mixture of fine crushed stone (up to ½ in.) and hot asphalt being packed about them for a distance of 8 in. on each side. The entire crossing is then covered with fine stone up to the level of the top of the rails, sprinkling it freely with a good quality of road oil, while fine stone is scattered. The cost of such a crossing is $11.95 for a single track, and $25.45 for a double track crossing (1918 prices) as compared with $28 and $56, respectively, for plant.

A similar type of crossing can be built by packing a mixture of crushed stone (½ in.) and hot asphalt about the rails for a distance of 4 in. on each side and then filling in with a mixture of bituminous macadam with a ½-in. top dressing of ½ in. stone mixed with bituminous material and rolled thoroughly. The cost of such a crossing is $6.55 and $16.25 for single and double tracks, respectively (1918 prices).

A third form of construction is secured by filling the spaces between the ties and between the tracks for the full width of the road between the outside ends of the outside tracks and for the full width of the highway with clean stone ballast thoroughly settled together, this stone of ballast size to come up to the under side of the head of the rail. A good grade of stone screenings containing particles of stone up to ½ in., but with the fine dust and loam screened out (or a clean, fine gravel containing a very small percentage of loam makes a good aggregate) is then mixed with two gallons of good No. 1 road oil to which one gallon of cold water has been added. Two gallons of this mixture are added to one cubic foot of aggregate and mixed well until all particles are well coated with this emulsified asphalt, the same as in mixing concrete. The concrete thus made is then spread over the surface of the road and rolled or tamped thoroughly to the level of the tops of the rails. Where the existing crossing is good except for the top surface, all that is necessary is to scrape off this top surface for about two inches below the top of the rail and proceed as above.

The cost of such a crossing is $13.95 for single track, and $29.45 for double track.

P. M. Dinan, Supervisor, L. V. (Chairman).

Discussion

The discussion of this report hinged largely on the recommendation of the committee that all rail joints be eliminated in road crossings. A number of members described their practice of using 39-ft., 45-ft., 60-ft. and 66-ft. rails through crossings in order to avoid joints in those limits. In some instances rails are cut in half and laid with square joints through the crossing to secure this result. The fact was brought out that it has become the recent practice of a number of rail mills to charge a premium of $5 or $6 per ton for rails longer than 33 ft.

This has tended to discourage their use in some instances, but even at this increased price a number of members expressed the opinion that it was a good investment and urged their extensive use.

A number of the speakers called attention to the large amount of timber being used for crossings and the saving of wood to be accomplished by using a substitute crossing. At the same time attention was drawn to several objections to the macadam crossings, including the difficulties encountered on sharp skews and the fact that some communities objected to their use. It was also conceded that they are not entirely satisfactory for paved city streets. However, it has been found that, with proper construction, most towns may be educated to the macadam construction and even induced to co-operate in carrying out the work. In recommending the use of a substitute for plank crossings, attention was called by several to the hazards of the plank crossing due to loose planks being picked up by the pilots of engines. To be a success a macadam crossing must have a good binder and even with this some material gets on the rail and causes a certain degree of pitting, but this was not considered at all serious.

The report was accepted by the association with the exception of formula No. 3, which the chairman stated was still experimental. This involves the use of an emulsified asphalt, concerning which considerable expert information was presented, following which this portion of the report was accepted as information.

The Labor Supply

Hugh Reid, of the United States Department of Labor, Washington, D. C., spoke Tuesday afternoon on the labor supply, the factors which are influencing it, and the outlook for the future. He stated that there are approximately 37,000,000 persons in gainful occupations in the United States, nearly 11,000,000 of whom are engaged in farming. Of the remainder approximately 3,594,000 are unskilled. The United States is a consumer of unskilled labor, converting it into skilled artisans. Its supply of unskilled labor comes almost wholly from abroad.

Previous to the war over 1,000,000 immigrants entered the United States annually, of which approximately 600,000 were unskilled. Following the outbreak of the European war, this immigration was reduced to 25 per cent of normal at once and in 1918 and 1919 it was only 9 per cent of the pre-war figure, while in the latter years the percentage of unskilled labor to the total fell from approximately 50 per cent to less than 25 per cent. During the war large numbers of unskilled men also returned to their homes. With immigration shut off, a swirling movement of labor was set up in the United States, as a result of which about 600,000 negroes came North, creating crop shortages in the South.

Speaking of the future, Mr. Reid stated that in his opinion no one can forecast accurately what may develop. The index to immigration to America is the industrial situation in Europe. He did not anticipate any great immigration immediately because of the expense and difficulty in reaching our shores. In his estimation the great problem is not that of the shortage of labor, but of its distribution. Because of the surplus which has ordinarily prevailed, the United States has never had to develop an elaborate system of labor distribution such as has been built up in Europe in the form of public employment exchanges.

In conclusion Mr. Reid stated that it was his belief that the labor situation will remain practically as it is now insofar as it may be affected by conditions outside of the United States.

Talk by Mr. Felton

At a meeting held on Tuesday evening, S. M. Felton president of the Chicago Great Western and formerly director general of military railways at Washington, gave a talk on the part played by railway men in America's participation in the war. He explained the entire lack of facilities of the French for the transportation of American troops and supplies and outlined the manner in which our railway troops and equipment were assembled and organized.

Following Mr. Felton's address a group of moving picture films were shown, illustrating the manufacture of steel rails from the unloading of the ore to the loading of the rails for shipment.

Increasing the Efficiency of Labor

By C. A. Morse
Chief Engineer, C. R. I. & P.

There has never been a time in the past generation when it was necessary that there should be such radical changes in maintenance of way methods. We have always been able to get cheap labor and have, in fact, used the cheapest class. The result has been little incentive for the use of mechanical appliances or for being particularly careful that every hour of every man was put in to the best advantage. With the cost of labor doubled and the wages of section foremen increased 50 per cent, there opens up a big field for the careful study of the use of both man power and machinery on our maintenance of way work.

There are in my opinion many advantages in this change in the wages of both section foremen and track labor. In the first place, there was no class of men on the railroad that, considering the responsibility that rested upon them, were so poorly paid as the section foremen. They were and are responsible for the track on their sections 24 hours in the day, and a more faithful and loyal set of men as a class does not exist, I for one was much pleased to see them get the increase in salary that they did.

The low wages paid track labor gave us the poorest class of labor in the land, in fact—except in the country districts—we only got what was left after every one had taken the pick of the men, and we were breaking in much of the foreign labor that could not speak English. They worked in maintenance of way gangs until they could understand and speak a little English and then the best of them left for work that paid higher wages. One result of this was that we have been very short of materials from which to make foremen and many roads have put on special apprentices at increased wages in order to train men for foremen. With the increase in wages now being paid we will be able to pick our men, and also to have plenty of timber out of which to make foremen since the salary paid a section foreman will make it attractive for them.

The fact that we are going to be able to have a better class of men brings us another problem, which is providing proper housing facilities. Old car bodies, tie houses, anything that resembled a protection from the weather has been considered all that was necessary. It is a good thing that something has come to cause a change in such methods. We should all insist on good clean, commodious, comfortable and sanitary quarters for track laborers. There is no reason why a man working on the tracks of a railroad should not have a place to eat, sleep and rest that is comfortable and inviting and where a man can maintain his self-respect.

With choice men well quartered there comes the problem for the section foremen, roadmasters and maintenance officers of using the services of these men to the best advantage so that every hour's work of every man is done where and in such a way as to return the best results to the property.

Maintenance of way work has too often been done in a haphazard manner, this being caused to a greater or less extent by the many interruptions that break into a day's work. In order to get the best results from a certain expenditure on a section or roadmaster's division, the work should be systematized; it should always be kept in mind that maintenance of way begins at the outside of the right of way fence on one side of the right of way and extends to the outside of the fence on the other side.

It is customary to replace or put splices on a broken rail *at once* when discovered. Next in importance should be the replacing of a broken tie, as soon as possible after it is discovered. This on the principle that "A stitch in time saves nine." Ditching of cuts should be done systematically and not left for "odd time" work. There is no work that pays for itself so promptly as ditching cuts—it saves surfacing the track through the cut at least once and often twice a year. A day should be set aside and section gangs required to ditch cuts either all of that day or a half of that day, and the foreman should be required in his weekly report to show the number of lineal feet of cuts ditched on one side during the week and its location. Repairs to right of way fences should be handled in the same manner.

There has been an idea on some railroads, especially those where ballasting has only been done for a few years, that track ballasted with broken stone, gravel, slag, etc., should not be taken out of face, but that the low spots should be raised and the line and surface maintained in that way. ***This is a mistake.*** All ballasted track should be

taken out of surface once in every three or four years, and a section foreman should be required to take at least one fourth of his track out of face each year, doing what he does continuously to a face.

Another matter that has attracted my attention this season, particularly in the western country where we have had so much wet weather and where we have such great crops, including a rank crop of weeds, is that our section foremen do not seem to realize the advantage of keeping this vegetation out of the track and ballast material. They are inclined to chase weak spots rather than to get after the vegetation.

Digging out the grass and weeds permits the sun and wind to dry out the ballast and embankment, and when dried out any work done on the track stays there, while if wet it goes down again after a few trains have passed over it.

Track bolts should be tightened at least twice a year, and both the bolts and the joints should be given a coating of crude oil at the same time. Some roads are oiling the rail below the head, including spikes, tie plates, joints and bolts, and believe it economical to do so, especially where they have much brine drip from refrigerator cars.

In order to do maintenance of way work systematically a maintenance of way budget should be made up for each roadmaster's territory, sub-divided into section foremen's territory.

This budget should be divided:

(1.) Into the minimum organization that can keep up the track, not including tie renewals; (2) The additional help required to do work that is required at certain seasons, such as mowing right of way and the tie renewal program; (3.) The additional help required to do work that would be of benefit and that would tend to cheapen future maintenance cost, such as widening embankments and cutting surface ditches; (4) An amount to cover extraordinary expense due to weather conditions, wrecks, removal of snow, ice and sand, and other extraordinary expenses. This item should be based on average expenses for this class of work, say during the past five years, revised to fit present labor and material prices.

Under each of these headings the labor cost and material cost should be stated separately. This budget should be made up in detail as to lineal feet of rail of different weights to be relaid; ties to be renewed, divided as to main tracks and sidings; cubic yards of ballast of each kind required, giving location where rail and ballast are to be inserted; lineal feet and location of cuts to ditch; lineal feet and location of surface ditches; lineal feet and location of banks to be widened; number and kind of road way signs to be renewed, etc., etc. With a budget of this kind carefully prepared, each section foreman has his year's work laid out for him and has something to work to.

With high priced labor it becomes all the more necessary to keep tools in good repair, and in the case of axes, adzes, scythes, shovels and hoes that they be kept sharp. A tool grinder should be kept on the car at all times so that tools may be sharpened as soon as they become dulled.

There are several types of mowing machines made that can be attached to a motor car or hand-car; there are disc weed cleaners; tie tamping machines are in use on many roads, and experiments have been made in the use of a caterpillar tractor for mowing right of way, plowing fire guards and ditching cuts.

With the class of men that we can get for the wages paid at this time, we can operate any of these machines. Much good work is being done at present in the use of the oxy-acetylene torch in repairing worn frogs and switches, and study should be made to see how any class of work can be done the cheapest, and if some mechanical arrangement will cheapen the work it should be used.

Treated ties should be used to reduce maintenance expense. While a roadmaster may not have the authority to get them on his particular road, he can help to get the people on his road to thinking about the matter. The railroads that began using treated ties 10 years ago are reaping the benefit of the investment today in big figures; they are averaging about 200 ties to the mile of all tracks, while the average number of ties used on a road where treatment has not been used is over 300 per mile of all tracks.

Large sums are spent in squaring up ties where track has run and this has to be done at least once a year. By the use of rail anchors this can be avoided, and the labor of squaring up the ties and retamping them and of getting the track back in shape will be saved.

It would be a great thing for all concerned, including the men employed on the sections, if the work could be arranged so as to keep practically the same number of men on the section the year 'round. When one can provide steady work for men, they will make homes and be able to live much better and be more contented and dependable. Much work, such as relaying of rail, can be done in the winter by doubling up section gangs.

The heavy sections of rail now in general use make it necessary to use track laying machines, and by their use the number of men necessary in a gang employed in relaying rail has been cut down fully one-half. In a similar way on ballast work, by the use of convertible side and center dump cars, the amount of shoveling to be done in getting ballast in its proper location has been very much reduced. The steam shovel and the ditching machine, together with a modern spreader, have reduced hand labor to a minimum in widening cuts and embankments. There should be a steam ditcher on every operating division, and in many places on every roadmaster's division.

The roadmaster should also revise his methods to coincide with the new order of things, so as to keep in closer touch with the methods employed by the foremen to get the best work. The days of the roadmaster riding on the back of a passenger train and throwing off "butterflies" has about gone. While he should ride a passenger train over his territory in daylight about once a week to keep in touch with the riding of the track, he should get over his territory the balance of the time on a motor car or *on foot*. A roadmaster should plan to walk over every foot of his track twice a year. He should plan to walk over *one* section each week, having the section foreman with him, if possible.

The "eight-hour" day has reflected a greater hardship on railroad maintenance of way than on probably any other class of work, for the reason that the section gang's work is scattered over from 4 to 10 or 12 miles, and the men go to and from the work on the company's time. The result is that where hand-cars are used the effective time on track is only about 6½ hours, and even with motor cars it is only about 7 hours per day.

There is bound to be an adjustment of wages downward when things get settled in this country, but everyone should try and save something out of the present high wages. There is no class of people that find it harder to save money than railroad employees, owing to their being transferred from place to place, and thus being discouraged from purchasing real estate. Building and loan associations are today regulated by the states, the same as banks, and are safe places to invest money, and they have the advantages of taking monthly payments.

I want to suggest that you talk to your section foremen about saving some of their money in this way, and they may induce some of their men to do the same thing. The man who is saving money is more apt to want to work steadily and he is also more apt to be saving for the company that he works for.

Labor Saving Devices

By J. B. Baker

Supervisor on General Manager's Staff, Pennsylvania Railroad, Philadelphia, Pa.

The weight of the rail now in use makes it imperative that a power rail loader be used. Those in common use consist of a derrick and boom, with rail hook, and obtain the air from the train line. A crew of six men is customarily employed to operate them. Small steam derricks are being used successfully to unload rail and work faster than air unloaders, but are more expensive to operate and maintain. Where rail is unloaded in reclamation yards, the magnet crane is the most economical equipment.

Where it is possible to obtain the use of the track for the major portion of the day, a power-operated rail laying machine is economical. A machine of this sort will lift the new rail into track and travel over the newly laid rail at slow speed. The splices are placed on the rail and bolted up by a close-quarter air motor using an air supply from the locomotive operating the rail derrick. Under heavy traffic, such as obtains on many eastern roads, it is possible to obtain the use of track for periods aggregating not more than from two to three hours per day. The gang must be organized, with a view to starting at once after the passing of the last train and make every minute count. In this operation a small hand-operated rail layer, consisting of a carriage and boom traveling on the opposite rail from that being installed, and lifting the rail by means of hand winches, is a real labor saving device. On rail weighing as high as 125 lb. per yard, this machine, operated with 5 men, will replace 20 men on the tongs. The old rail is thrown out several rail lengths ahead of the operation and the new rail set in by machine at the rate of a little better than one rail per minute. This operation is usually no faster than that done by a competent gang of tong men, but a speed can be maintained equal to that of the tong men by using less men and the operation by machine is undoubtedly easier on the men. In many localities it is frequently difficult for the men to accustom themselves to the use of this device, but where it has been in use for some time the men would object strenuously to going back to the old method. Sixty-foot rail weighing 125 lb. per yard, has been laid successfully with this device.

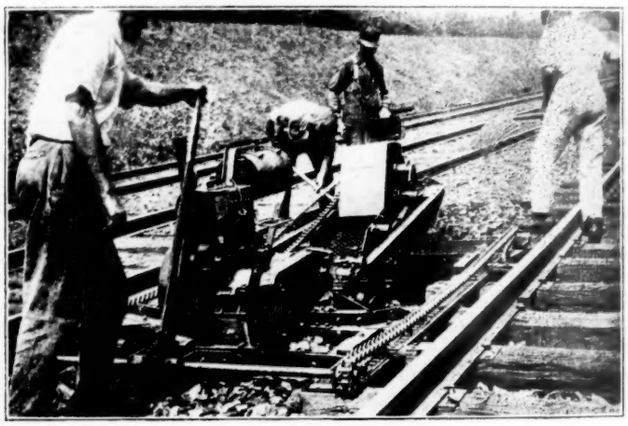
Unloading Ties—The unloading of ties is usually done by hand. Where ties are distributed by work train and a rail loader is on the train, a hook should be carried in the equipment which will unload from an open top car and release in mid air. Where unloading in yard is done with a view to piling ties, davits placed in the stake pockets, with hooks and chains, either power or air operated, designed to raise one or more ties at a lift, can be used to advantage. The possibility of clamping a light I-beam to the roof of a box car, extending through one door and supported on an A frame, with a view to assisting in the unloading of ties from such cars, should be given careful consideration in the light of existing local conditions.

It is not uncommon to receive ballast in flat bottomed gondola cars, making necessary the shoveling of this ballast over the side or end of the car. This is an extremely slow operation, and should be avoided wherever possible. In localities where steel mills are accessible, such cars have been turned over to the mills to transfer loading by a car dump to hopper cars. The usual charge for this work is one dollar per car. A drag scoop can be used to advantage on gondola cars, especially those with drop ends.

A ballast leveler which will remove the ballast to very close to the top of tie is an extremely economical machine, particularly where applying ballast in long stretches. It is perfectly practicable to reinforce a spreader or snow flanger so that this equipment can be used to advantage in leveling either stone or cinder ballast.

Cleaning Ballast

The cleaning of ballast in the center ditch and in the cribs is a job that until recently was conceded to be strictly a hand operation. The Trench-Zepp ballast cleaner provides a screen which is in many cases a help to the workman, especially in cleaning the border, but some difficulty has been experienced in the operation of these screens in the inter-track space, due to the necessity of lowering them for passing trains. It is frequently necessary for the workman to throw the ballast over his shoulder onto the screen, in which case the scattering of the dirt by the wind is objectionable. A machine designed to clean ballast in the inter-track space was recently built by the Link-Belt Company of Philadelphia, and is now in operation on the Pennsylvania Railroad. The machine is designed with conveyors or buckets which scoop up the ballast from the ditch and throw it onto a shaking screen. The dirt goes through the screen and is shoveled out by hand from a tray while the clean ballast passes over the screen and falls again into the ditch. The entire machine is operated by a gasoline engine mounted directly on the mechanism and is built with such compactness that it will clear traffic on both of the adjoining tracks. The method of disposing of the dirt was a problem in the design of this machine. An attempt was made to blow it to the rear of the cleaner through pipes, and collect it into bags, but this was not successful, as the pipes clogged easily if the dirt was slightly damp.



Ballast Cleaning Machine

The ballast cleaner moves forward on caterpillar travelers, resting on the ends of the ties, and operated by a hand ratchet at the rear. It is intended in future machines to connect this ratchet to the engine, enabling the ballast cleaner to move forward under its own power. A crew of five men is required to operate the machine, but this will be reduced to four when the device is self propelling.

The first attempts resulted in the cleaning of three rail lengths in five hours. As the men became accustomed to the machine this speed gradually increased and with the help of slight changes in the design, a speed of one rail length (33 ft.) in 45 minutes, is now being maintained.

A great deal of ballast cleaning would be eliminated if the front-end cinders and other dirt could be removed from the top of the ballast before they are allowed to find their way into the body of the ballast. This is in many places done by sweeping, and is at times neglected until the cinders lying on top of the ballast cause signal failures.

Although sweeping removes a large portion of this dirt, it also is the means of pushing some of the dirt into the crevices of the stone. Steps are now being taken to build a vacuum suction machine which will lift this loose dirt from the top of the ballast faster, more easily and more thoroughly than can be done by hand. In addition to this, plans have been drawn for a large vacuum ballast cleaner to be mounted on a flat car, with a view to picking up the ballast to a depth of 4 in. below bottom of tie in both cribs and inter-track space. The ballast would be screened and the dirt deposited in a gondola car, while clean ballast would be replaced in the track. It is estimated that a machine of this type should clean ballast at the rate of one-half mile of single track per day.

Applying Bolts and Spikes

The application of bolts by the common trackmen's wrench is being replaced, where possible, by faster and easier methods. Around interlockings, where it is possible to obtain a supply of air, a close-quarter air motor with a proper chuck and socket will be found to save time and labor during any track changes. The same close-quarter air motor with an extra chuck can be used to drill bolt and bonding holes. Where air is not available, the use of a ratchet wrench has been resorted to economically, the nut being tightened to a certain point with a ratchet wrench and tightened finally by about two pulls on a standard track wrench.

About two years ago a pneumatic spike driver was developed and placed on the market. It consisted of an air hammer mounted rather heavily with a cross arm handle at the top and a button at the bottom fitting over the head of the spike, with a view to driving the spike into the tie by placing the machine immediately on the head of the spike. While operating, the machine was about as efficient as two spike drivers, but the necessity of changing hose every 500 ft. and the newness of the machine in general, contributed to showing the operation unsuccessful. If the machine could be made to start its own spikes it would be a decided improvement, but any additional mechanissm would increase the weight, and the tool is cumbersome as it is.

Surfacing

Hand surfacing is being replaced on many roads by the pneumatic tie tamper. This operation has been largely limited to stone ballast, but with larger faced bitts there seems to be no reason why it should not be used to advantage in cinder and gravel ballast. One of the problems in the use of these tampers has been to train the men in handling the tool. When put in the hands of an inexperienced man these tampers are hard on the workmen and the men at first shun their use, but when taught how to properly hold the tool and after becoming accustomed to its working in general, very satisfactory results are being obtained. Experience has shown that best results can be obtained from the tampers by assigning a definite gang to their operation and allowing this gang to go from place to place over one supervisor's territory, rather than by passing the tampers from one section to the next, in which case they would be continuously in the hands of inexperienced men.

A comparison of the costs of machine tamping versus hand tamping, based upon the performance of these machines for several months showed, on the basis of 11,520 tie parts per mile of track (four parts per tie) a cost of $.038 per part for machine tamping as against $.050 per part for hand tamping, representing a saving per mile of track of $138.24 in favor of the machine tamping; and in another instance a cost of $0.027 per part for machine tamping as against $.050 per part for hand tamping, a saving of 2.3 cents per part, or $264.96 per mile of track, air being available from existing air lines in the latter instance.

Discussion

This paper brought out considerable discussion, particularly regarding special applications of standard equipment to local problems. Interesting ways were described in which difficult work normally requiring a considerable force of men was handled by use of special equipment.

Report on Drainage

No matter how good the rail, ballast and ties may be, if tracks do not have the proper drainage they will soon become out of line and surface. Drainage has been neglected on many roads in the last few years on account of the scarcity of labor. At the present time, with the high cost of labor, we must seek mechanical devices for proper ditching and draining. In the past, hand work and a work train were thought to be essential to the clearing of ditches. Today we have ditching machinery that will clear out ditches, shape and slope them. One ditching machine will do as much as 50 men.

Where water lies on the surface or in ditches in the fall and during the winter, we find the track heaving. It is just as expensive to shim tracks and keep constant watch over them when shimmed as to do the proper ditching to carry away the water so the road-bed will be dry and the track not heave.

Through cuts where silica sand, quicksand or alkali clay are encountered that slide quickly, the time to install drainage is in very dry weather; sheet piling should be used in opening the ditches. Great care should be taken to lay the tile to the proper fall from the beginning to the outlet of the tile. At the mouth of the tile a mattress of good heavy rip-rap or a bottom of old ties should be placed to prevent the dirt from washing away from under the tile.

Where there are soft spots in the track, either in cuts or on fills where track slides on account of improper drainage or softening, a ditch four or five feet deep and three or four feet wide, filled with rip-rap or stone, with laterals under the track, will be found to be very beneficial. Laterals should be placed wherever necessary to draw the water from under the tracks. Embankments extended along existing tracks on earth or clay and having during rainy seasons insufficient bond with the existing fill, slide frequently on account of this leakage of water between the old and new grades. In many cases an auger can be used to bore the side of the bank and a pipe placed therein to afford an outlet for the water.

Below are figures of the cost of ditching by different methods for 1917 and 1918.

	Per cu. yard
American Steam Ditcher	$0.4131
Mahoney Ditcher	0.4034
Push Cars, two	0.5862
Car Barrows	0.7670
Wheelbarrows	0.7142
Casting	0.3525

These cost data were collected on work actually performed on a single track, having an average of six tonnage trains during working hours; of soft clay road-bed where the standard ditches are such as are ordinarily known or described as shoulder ditches.

J. P. Corcoran, C. & A. (Chairman).

Discussion

A number of roadmasters described their experience with the use of various types of ditching machines in the construction of side ditches. One speaker went into detail concerning the use of three ditchers in one train and reported considerable economy from this method since the charge for work train service was distributed over the output of the three machines. In answer to a question he stated that this method was used for rather heavy work and slides. The

depth of drains was the source of considerable discussion, it being pointed out that in northern latitudes it was impossible to cut the ditches deep enough to go below the frost line. Several men from northern railroads stated that they did not do much tiling on this account since a tile deep enough to avoid frost is too deep to be of value. This was questioned in one case where the speaker stated that he found it necessary to go four or five feet with a drain to get any results. There was also some discussion of sub-drainage. An officer of an eastern line described in considerable detail the methods which had been necessary to restore drainage on multiple track lines where the roadbed had been allowed to become saturated and mucky.

Equation of Track Values

A progress report was presnted by W. P. Wiltsee, principal assistant engineer, N. & W., Chairman, who stated that the committee has in view the possible establishment of the hours of labor required for each of the different kinds of work necessary in the upkeep of a section of railroad under different conditions, both as to traffic and as to physical characteristics.

Other Business

At the annual dinner on Wednesday evening the principal speaker was Charles H. Piez, president, Link Belt Company, and formerly vice-president of the Emergency Fleet Corporation; he told of his experience with handling of labor by an independent board not responsible to the corporation. Based on the failure of this plan he believed a return of the railroads to their owners must provide for negotiation with labor by a body responsible to the rate making authority.

W. G. Arn, assistant engineer of maintenance of way, Illinois Central, and formerly lieutenant-colonel, Thirteenth Engineers, and F. A. Preston, formerly major in the Aircraft Corps, also spoke.

St. Louis was decided upon as the place for holding the next convention.

The Track Supply Exhibit

The Track Supply Association presented its eighth annual exhibit in a room adjoining the convention hall. This exhibit was the largest which has ever been made by this organization, over 60 firms being represented. Special attention was given this year to the attractive presentation of the exhibits and to the display of full-size equipment rather than models or photographs.

The officers of the Track Supply Association for the past year are: President, Edward Coleman, American Hoist & Derrick Company, St. Paul, Minn.; vice-president, Wm. H. Armstrong, Ingersoll-Rand Company, New York; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, E. T. Howson, *Railway Age*, Chicago; J. V. Westcott, Q. & C. Co., Chicago; D. T. Hallberg, P. & M. Co., Chicago; and R. A. Van Houten, Sellers Manufacturing Co., Chicago.

The list of exhibitors together with the devices or materials on display and the names of their representatives is as follows:

An Reduction Sales Company, New York City. Oxygen, acetylene, welding and cutting apparatus. Represented by Ellsworth Mills, B. N. Law, R. T. Peabody, E. S. Brewer and B. A. Eliason.

Ajax Forge Company, Chicago.

Alexander Crossing Company, Chicago. Exhibiting continuous rail crossing. Represented by J. Eggleton and W. W. Rasser.

American Hoist & Derrick Company, St. Paul, Minn. Transparencies and photographs of "American" railroad ditcher. Represented by Edward Coleman, J. L. Hickey and C. T. Hook.

American Steel & Wire Company, Chicago. Railroad fence, woven wire fence and American steel fence posts. Represented by L. B. Shanahan, P. J. Hindmarsh, J. W. Collins, A. N. Frouds, M. E. Evans and W. E. Mackley.

American Valve & Meter Company, Cincinnati, Ohio. Anderson economy switch stands, interlocking switch stands and safety switch locks. Represented by J. T. McGarry and F. C. Anderson.

Anchor Company, Milwaukee, Wis. Anti-rail creepers. Represented by Orlando Metcalf and George H. Chadwell.

Balkwill Manganese Crossing Company, Cleveland, Ohio. Models of Balkwill articulated cast manganese railway crossing. Represented by S. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa. New Century switch stand model 51-A, switch stand model 1217, Steelton positive switch stand model 52-A; switch stand model 1222 with and without target, double tongue for steam roads. Represented by R. E. Belknap, R. W. Gillispie, Neul E. Salsich, J. F. Hennesy and E. H. Gumbart.

Blaw-Knox Company, Pittsburgh, Pa. Clam shell buckets, culvert forms. Represented by R. D. Allrich and L. R. Grannis.

Buda Company, Chicago. Section car, jacks, No. 9 "C" switch stand, Hyduty Paulus track drill, new Liberty tool grinder. Represented by M. A. Evans, H. C. Beebe, E. A. Thiele and A. L. Bliss.

Carbic Manufacturing Company, Duluth, Minn. Carbic flare lights and cakes, and oxy-acetylene cutting and welding equipments. Represented by G. B. Van Buren and C. H. Bolinder.

Carnegie Steel Company, Pittsburgh, Pa.

Chicago Malleable Castings Company, Chicago. Thomas rail anchor tie plates. Represented by L. Lewellyn, W. M. Osborn and Herbert MacDonnell.

Cleveland Frog & Crossing Company, Cleveland.

Crerar, Adams & Co., Chicago. Eureka bonding drills, Calumet track drills, jacks, shovels, brooms and die starters. Represented by Russell Wallace, G. D. Bassett, J. A. Martin, C. W. Gregory, W. I. Clock and R. M. Bullard.

Deeming-Endsley Company, Chicago.

Dressel Railway Lamp Works, New York.

Duff Manufacturing Company, Pittsburgh, Pa. Barrett track jacks, automatic lowering geared ratchet and ball-bearing jacks. Represented by C. N. Hulin and E. A. Johnson.

Elliott Frog & Switch Company, St. Louis, Mo.

Fairbanks, Morse & Co., Chicago. Light inspection car equipped with two cylinder kerosene engine and heavy section and extra gang car. Represented by E. C. Golladay, Benjamin S. Spaulding, A. A. Taylor, F. J. Lee, C. B. Skelton, F. M. Condit, E. Lang, Charles Wilson, G. Howard, D. K. Lee, E. J. Coverdale, Stephen Smith, H. E. Vergosen and Mr. Daggett.

Fairmont Gas Engine & Railroad Motor Car Company, Fairmont, Minn. Roadmaster's inspection car, hand car exhibition engine. Represented by W. F. Kasper and H. M. Starrett.

Frog, Switch & Manufacturing Company, Carlisle, Pa.

Hauck Manufacturing Company, Brooklyn, N. Y. Kerosene burner thawing outfits. Represented by Willis C. Squire and G. A. Nelson.

Hayes Track Appliance Company, Richmond, Ind. Derails and stands. Represented by S. W. Hayes and R. W. Slautterback.

Ingersoll-Rand Company, New York. Tie tamping equipment and air-operated track tools. Represented by William H. Armstrong, C. S. Kulp, J. N. Thorp, Jr., and C. W. Melcher.

Kalamazoo Railway Supply Company, Kalamazoo, Mich. Inspection car with step starter, kerosene or gasoline engine, level gage and master gage. Represented by J. B. McKinnon, D. A. Stewart, F. E. McAllister, M. C. Study and H. R. Miller.

Lackawanna Steel Company, Lackawanna, N. Y. Rail joints, safety head angle bar, Abbott joint plates, hook shoulder tie plates, rail anti-creepers, track bolts and spikes, deseamed rails, steel sheet piling. Represented by Jay L. Hench, F. E. Abbott, G. O. Benson and E. J. Welter.

Lidseen, Gustave, Chicago. The Lidseen force feed oilers. Represented by E. W. Koon.

Lundie Engineering Corporation, New York. Lundie tie plate. Represented by C. Z. Moore, Eugene Brandies and W. Brooke Moore.

Luther Grinder Manufacturing Company, Milwaukee, Wis. Grinders to grind twist or flat drills and miscellaneous tools. Represented by C. R. Pfeifer, F. S. Hyland and H. T. Hardy.

Madden Company, Chicago. Illustrations of the three-man rail layer, model of Veerac motor, photographs derrick truck car, Harris-Muff ballast screen, models of the Wagner switch point straightener, Richter blue flag derail, Red Top fence posts, Blair tie spacer, model Clough unloading hook, and model perfect rail base. Represented by H. C. Holloway, W. W. Glosser and R. W. Dawney.

Milburn, Alexander Company, Baltimore, Md. Portable carbide lamps, oxy-acetylene and cutting apparatus. Represented by John A. Schreiber and David Bartlett.

Mudge & Co., Chicago. Kerosene inspection motor car. Represented by Burton W. Mudge, Robert D. Sinclair, Karl J. Eklund, Albert C. Force, Fay E. Fosson and L. O. Stretton.

National Lock Washer Company, Newark, N. J. Nut locks. Represented by R. L. Cairncross and A. T. Thompson.

National Malleable Castings Company, Cleveland, Ohio. Rail anchors, rail braces and tie plates. Represented by T. W. Aishton, J. J. Byers, L. S. Wright and J. A. Faitz.

North American Engine Company, Algona, Iowa. Inspection car. Represented by J. Edward Murphy, Dr. C. H. Cretzmeyer and E. A. Adams.

Oxweld Railroad Service Company, Chicago. Oxy-acetylene welding and cutting apparatus. Represented by F. C. Hasse, W. H. Kofmehl, L. C. Ryan, C. M. Marshall, I. Allison, R. C. Kohn, F. C. Tichen and H. N. Real.

P. & M. Company, Chicago. P. M. Henggi, Vaughan and Ajax anti-creepers and bond wire protectors. Represented by D. T. Hallberg, John Ritchie, John Reagan, George E. Johnson, J. E. Mahoney, F. W. Reeve and P. V. Samuelson.

Pocket List of Railroad Officials, New York. Copies of pocket list. Represented by J. Alexander Brown, Charles L. Dinsmore and Harold A. Brown.

Positive Rail Anchor Company, Marion, Ind. Rail anchors, Fallon girder

type guard rail brace and plate, Busse guard rail. Represented by Arnold H. Told, L. C. Ferguson and E. A. LeBeau.

Q. & C. Company, New York. Bonzano Thompson rail joint, guard rail clamps, Q. & C. snow melting track device, Q. & C. adjustable rail brace, rolled steel step or compromise joint, Q. & C. Freeland derails and Sampson rail bender; Fewings car replacers. Represented by L. T. Burwell, J. L. Terry, R. J. McComb, E. M. Smith, A. R. Horn and J. V. Westcott.

Rail Joint Company, New York. Standard, compromise, frog and switch-joint insulated rail joints. Represented by W. S. Boyce, Alex Chapman, Charles Jenkinson, J. H. Larson, R. W. Tayne, V. C. Armstrong, E. A. Condit, Jr., W. P. Thompson, McLeod Thompson, G. T. Williard, H. C. Hickey, E. F. Schermerhorn, J. N. Mead and C. B. Griffin.

Railroad Supply Company, Chicago. Tie plates and derailers. Represented by A. H. Smith, Hiram Buck, H. G. Van Nostrand, George Nibbe and E. H. Bell.

Railway Review, Chicago. Copies of paper. Represented by Harold A. Smith, Charles L. Bates and W. M. Camp.

Railway Safety Tie Company, Milwaukee, Wis. McSafety tie plate and steel concrete ties. Represented by E. M. McVicker and A. W. Tabert.

Ramapo Iron Works, Hillburn, N. Y. Manganese switch point, rolled steel double-shoulder switch slide plate, special switch slide plate, machined heel plate, switch stands, guard rail clamps. Represented by Thomas E. Akers, Arthur Germunder, J. B. Strong, J. Edgar Davidson, Robert J. Davidson, Jr., W. W. Snow and W. C. Kidd.

Reading Specialties Company, Reading, Pa. Guard rail clamps, rail benders, rerailers wtih clamps, trolley rerailers, compromise joints and derails, guard rail, car shed shoes, car chocks, tie spacers, clamps for broken rails. Represented by B. John Buell and W. J. Zimmerman.

Rooger Ballast Car Company, Chicago.

Simmons-Boardman Publishing Company, Chicago. Copies of Railway Maintenance Engineer and *Railway Age*. Represented by L. B. Sherman, E. T. Howson, W. S. Lacher and B. J. Wilson.

Sellers Manufacturing Company, Chicago. Sellers anchor bottom wrought iron tie plates. Represented by J. M. Sellers, G. M. Hogan, R. A. Van Houten, T. D. Crowley and R. J. Platt.

Southern Railway Supply & Equipment Company, St. Louis, Mo. Saunders car stopper. Represented by L. Boswell.

Templeton, Kenly & Co., Ltd., Chicago. Track jacks. Represented by W. B. Templeton and J. A. Cervenka.

Track Specialties Company, New York. Guard rail clamp, compromise rail joints, derails, rail benders, tie plates and rail braces, guard rail brace adjustable track shim, slide plate and switch brace, rail joints, anchor plate and foot guard. Represented by J. A. Bodkin.

Union Switch & Signal Company, Swissvale, Pa. Insulated rail joint. Represented by J. D. Roett and J. J. Cozzens.

Verona Tool Works, Pittsburgh, Pa. Track tools, track jacks, levels, gages, nut locks, Palmer rail joint spring and bonding strips, and Hillard portable milling machine. Represented by H. C. Mull, E. L. Ruty, E. Woodings, W. B. Lewis and A. T. Palmer.

Wharton & Co., Inc., William Jr., Easton, Pa. Guard clamps, Wharton O'Brien insulated switch rod and seamless steel cylinders for oxygen and hydrogen gas. Represented by H. F. McDermott, Charles M. Griffith and V. Angerer.

Wyoming Shovel Works, Wyoming, Pa. Red Edge track shovels. Represented by H. T. Potter, H. C. Emery, G. E. Geer and William Ziegler.

At the annual meeting on Wednesday morning the following officers were elected for the ensuing year: President, Wm. H. Armstrong, Ingersoll-Rand Company, New York; vice-president, David T. Halberg, P. & M. Company, Chicago; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Directors, Alexander Chapman, Rail Joint Company, Chicago; F. M. Condit, Fairbanks, Morse & Company, Chicago; Herbert Potter, Wyoming Shovel Works, Chicago.

The Southern Railway announces that its line between Washington, D. C., and Atlanta, Ga., 649 miles, is now double track throughout, the last section of second track, about three miles long, having just been finished. After the completion of work which is now going on between Charlotte, N. C., and Spartanburg, S. C., this line will be equipped with automatic block signals throughout.

The Railway Fire Protection Association will hold its sixth annual meeting at the Hotel La Salle, Chicago, on November 18, 19 and 20, instead of on October 21, 22 and 23, as was originally planned and announced. This postponement was authorized by the executive committee of the Association in order that railroad representatives serving in the dual capacity of accident prevention and fire prevention officers would be free during the month of October to devote all their time to conducting the "National Railroad Accident Prevention Drive."

Train Accidents in July[1]

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of July, 1919:

Collisions

Date	Road	Place	Kind of accident	Kind of train	Kil'd	Inj'd
†1.	New York Central...	Dunkirk	rc	P. & P.	12	17
17.	C. C. & O.....	Erwin	xc	F. & F.	0	0
17.	D. L. & W.....	Ackermanville	bc	F. & F.	1	2
19.	Lehigh V.....	Upton	rc	F. & F.	2	0
23.	Penn.	Tyrone	xc	F. & F.	1	3
*31.	N. Y. N. H. & H....	Portchester	rc	F. & F.	2	0

Derailments

Date	Road	Place	Cause of derailment	Kind of train	Kil'd	Inj'd
2.	Rich'd F. & P.....	Milford	d. truck	P.	0	9
4.	N. Y. O. & West....	Crystal Run	unx	P.	0	0
*9.	Monong. Con't'g.....	Pittsburgh	unx	F.	3	0
13.	Penn.	Kentland	fire	P.	0	5
14.	N. Y. Central.....	Lake Katrine	boiler	F.	2	1
18.	Del. & H.....	Colonie	.....	P.	0	15
23.	M. K. & T.....	Katy, Tex.	unx	P.	0	36
*25.	Balt. & Ohio.....	Long Run	.....	F.	0	0
30.	Phila. & R.....	Linfield	unx	F.	2	2

Other Accidents

Date	Road	Place	Cause of accident	Kind of train	Kil'd	Inj'd
5.	A. C. L.....	Charleston	boiler	P.	1	1
21.	Union Pacific	Castle Rock	boiler	F.	3	0

The trains in collision on the New York Central at Dunkirk, N. Y., on the first of July, at 2:20 a. m., were westbound passenger No. 7 and westbound passenger No. 41, No. 7, consisting of a locomotive and 12 heavy cars, running into No. 41, which was standing at the station. Eight passengers, three trainmen and one trespasser were killed, and 17 passengers were injured. The presence of the standing train was indicated by a home and a distant signal, and also a flagman; and the engineman (killed) applied the brakes; but an angle cock behind the tender was closed, making the brakes ineffective on the cars. A trespasser, riding between the tender and the baggage car had evidently closed the cock, ignorantly assuming that thereby he could stop the train, Dunkirk being his home. This collision was reported in the *Railway Age* of July 4, page 40.

The trains in collision on the Carolina, Clinchfield & Ohio at Erwin, Tenn., on the 17th, were a southbound freight, and a locomotive without train. The freight, consisting of 90 cars became uncontrollable on a descending grade and ran into the yard, striking the standing locomotive. Thirty-two cars were thrown off the track and damaged, and 25 of these, containing coal, were overturned. Estimated loss $23,000.

The trains in collision on the Delaware, Lackawanna & Western at Ackermanville, Pa., on the 17th were local freights. One engineman was killed, and one engineman and one fireman were injured. The collision was due to oversight of a conductor and an engineman, who disobeyed a despatcher's order.

The trains in collision at Upton, N. Y., on the 19th were eastbound freights. The leading train had been stopped because of failure of the locomotive, and the following train wrecked the standing caboose; and the conductor, inside of the caboose, was killed. A brakeman of the second train was also killed.

The trains in collision on the Pennsylvania Railroad near Tyrone, Pa., on the morning of the 23rd about 12:16 o'clock, were an eastbound through freight and a switching freight. The latter, coming out of an industry track, ran into the side of the train on the main line. One engineman and three other employees were injured, the engineman fatally. The yard-

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

train had run past a signal set against it (an interlocked position-light dwarf). Three main tracks were blocked and 31 passenger trains were delayed from nine minutes to two hours. Thirteen freight trains were delayed from 20 minutes to nine hours.

The trains in collision on the New York, New Haven & Hartford, near Portchester, N. Y. (in the township of Greenwich, Conn.) on the 31st, were westbound through freights. The leading train extra 098 was just coming to a stop, because of a block signal set against it, and the following train, M. H. 3, drawn by a heavy electric locomotive, ran into it at about 20 miles an hour. The caboose and eight cars were wrecked. The two men in the front end of the electric locomotive (the engineman and another engineman riding as instructor) were killed. The wreck took fire from an electric wire and these two men were burned. The collision occurred at 5:25 a. m., in clear weather. The conductor of another westbound freight, running on track No. 3 (to the right of track No. 1, on which the collision occurred) noticed that the engineman of M. H. 3 was apparently asleep and while passing called to him, but was not answered. The engineman at fault was 40 years old, and had been on duty 10 hours, 35 minutes. The point of collision is seven miles west of Stanford, Conn. All four main tracks were blocked 5½ hours. Investigation showed that the colliding train had passed both cautionary and stop signals set against it, and that both of the men had been asleep probably several minutes prior to the collision.

The train derailed on the Richmond, Fredericksburg & Potomac at Milford, Va., on the evening of the 2nd was northbound passenger No. 66. Three express cars, two mail cars and two coaches went off the track and one mail car was overturned. Nine persons were injured, none seriously. The derailment was due to failure of an equalizer bar of front tender truck.

The train derailed at Crystal Run, N. Y., on the fourth was westbound passenger No. 25. Five coaches were overturned and ditched. The train was well filled but the injuries to passengers were all classed as slight. The train was running at 40 miles an hour when a wheel of the tender jumped the track.

The train derailed on the Monongahela Connecting Railroad near Pittsburgh, Pa., on the 9th was a local freight. The locomotive was thrown off the track at a switch and was overturned, demolishing two dwelling houses. The engineman, the conductor, and a child in one of the houses were killed. The houses took fire from the locomotive firebox.

The train derailed on the Pennsylvania Lines near Kentland, Ind., on the 14th, was eastbound passenger No. 902. The train ran upon a burning trestle and the last two coaches fell through. Three trainmen, one mail clerk, and an express messenger were injured.

The train derailed near Lake Katrine, N. Y., on the 14th, was an eastbound freight. The locomotive was wrecked by the explosion of its boiler, and was overturned. The engineman and fireman were killed, and a brakeman was injured. The explosion was caused by low water.

The train derailed on the Delaware & Hudson near Colonie, N. Y., on the 18th, was one consisting of a locomotive and two coaches carrying workmen to the company's shops. One coach was thrown off the track and overturned and 15 employees were injured.

The train derailed at Katy, Tex., on the 23rd of July, was Gulf, Colorado & Santa Fe passenger train No. 17, running over the Missouri, Kansas & Texas. Seven cars ran off the track and 32 passengers and 4 employees were slightly injured; estimated total damage to cars $28,000. The cause of the derailment was not determined.

The train derailed at Long Run, W. Va., on the 25th was westbound freight No. 97. The locomotive was thrown off the track in a tunnel and the resulting wreck took fire. Seven cars of oil and merchandise were burnt up. The wreck blocked the tunnel for three days and trains between Clarksburg and Parkersburg had to be run by way of New Martinsville.

The train derailed at Linfield, Pa., on the 30th of July, was a southbound passenger. The baggage car was overturned. The engineman and fireman were killed and two passengers were slightly injured. The cause of the derailment was not determined.

The train involved in the accident near Charleston, S. C., on the 5th, was northbound passenger No. 82. The locomotive was wrecked by the explosion of its boiler, and the engineman and fireman were injured, the fireman fatally.

The train involved in the accident on the Union Pacific near Castle Rock, Utah, on the 21st was an extra freight. The locomotive was wrecked by the explosion of its boiler and the engineman, fireman and one brakeman were killed. Explosion due to low water.

Electric Car Accidents.—In a butting collision of electric cars near Punxsutawney, Pa., on the night of the 16th of July one passenger was killed and another was injured. Both of the motormen jumped off in time to save themselves. It is said that a defective block signal was the cause of the collision. The half dozen other electric car accidents reported in the newspapers in July caused injuries numbering from 3 to 20 each; but no fatal injuries, so far as reported. One of these accidents, at Pittsburgh, Pa., on the 15th, was a case of a street car being struck by lightning. The motorman was stunned; but the other injuries appear to have been due to panic rather than to electricity.

Canada.—At Stonecliff, Ont., on the sixth, the Imperial Limited express, of the Canadian Pacific, was derailed by a malicious obstruction and the fireman was fatally scalded. On the Canadian National near La Duramtaye, Que., on the 11th the eastbound Maritime express was derailed and the engineman and fireman were killed. Four other derailments of passenger trains in Canada resulted in a few injuries each, all being reported as not serious.

PUBLIC
DEMAND OF ORGANIZED LABOR THAT PRIVATE CAPITAL BE RETIRED FROM ALL RAILROAD MANAGEMENT
THEY'RE LOOKING AT EACHOTHER LIKE A COUPLE OF GUYS WHO'VE BEEN "STOOD UP" BY THE SAME GIRL

From the New Orleans Times-Picayune

"Well, Well, We'd Better Go Slow About This"

Convention of Traveling Engineers' Association

Economical Speed for Slow Freight Trains and Methods of Handling Air Brakes Discussed

THE TRAVELING ENGINEERS' ASSOCIATION met for its twenty-seventh convention at the Hotel Sherman, Chicago, on September 16, with H. F. Henson, road foreman of engines of the Norfolk & Western presiding. After the opening prayer President Henson addressed the convention.

President's Address

Mr. Henson spoke in part as follows: Our last convention met during the great world struggle and at that time all our attention was devoted to bringing the conflict to a successful conclusion. We have met the challenge of war. Now let us meet the challenge of peace and securely re-establish justice, loyalty and freedom. In these trying times labor cannot afford to put itself in the position of obstructing the wheels of progress. The workers must see that not only loyalty to their country but also loyalty to its industries is essential. The conservatism and loyalty of the traveling engineers has never been questioned and they can help to influence opinion among the many employees with whom they come in contact.

After referring to the present industrial unrest, Mr. Henson made a plea for rigid economy in the use of fuel and supplies on the railroads. In discussing the affairs of the association he mentioned that the American Railroad Association has invited the Traveling Engineers' Association to amalgamate with it and asked the members to give the matter consideration.

A report an handling air brakes was then submitted by the committee on that subject.

Handling Air Brakes on Passenger Trains

Before coupling to the train, the compressor steam valve should be opened wide, the steam end lubricator feed increased to about two drops per minute for each compressor having two steam cylinders, or one drop per minute for each compressor having one steam cylinder; then, to assist in charging the train quickly, the brake valve should be placed on tap and maximum main reservoir pressure accumulated.

Charging Train.—To charge the train quickly, release position should be used until, on use of running position, five pounds less than standard brake pressure is shown. The application for the terminal test of the brakes may then be made if those who will inspect the train are ready; otherwise the charging should be completed in running position.

Standing Brake Test.—After receiving the proper air whistle signal to apply brakes, a 20-lb. continuous reduction should be made and the brakes held applied until the inspector or trainman who is responsible for the proper operation of the brakes leaving any particular terminal has examined the brake on each car to see whether it is applied and has correct piston travel. Then, on receiving the proper train air signal, which should be given by the car discharge valve on the last car, the brakes should be released. When the rear brake releases, the one or more inspecting should examine each brake to ascertain whether all have released.

Brake Pipe Test.—If, for any reason, an angle cock or double-heading cock have been closed at any time, it should be finally insured that all such have been reopened by making an application, getting a signal that the rear brake has applied, then releasing and receiving a signal that the rear brake has released.

Running Brake Tests.—A running test is made by the engineman making an application that will satisfiy him that the brakes can be operated from the brake valve, and if he finds that they cannot be, he must at once signal for brakes. This must be made when engines have been changed or at other times after parted hose has been recoupled; also a sufficient distance (so that the train can be stopped by hand brakes) from draw-bridges, railroad crossings and other hazardous places and before going down heavy grades.

INCOMING BRAKE INSPECTION

On completing a stop at a terminal, the brakes should be left applied with a reduction of 20 lb. If the brakes were held applied to the stop with a light application, enough should be added to make a total of 20 lb.

STARTING AND SLACKING

Starting quickly, slipping drivers, taking slack harshly, or starting quickly after slacking, will cause shocks that are disagreeable to passengers and damaging to equipment. To avoid these the throttle should not be opened until the brakes are released. It should be opened gradually then, and the cylinder cocks should be open when starting conditions will permit, particularly during short movements, as at water cranes and when taking slack. Even after a slow-down and release, care should be taken not to open the throttle before all the car brakes are full released, and then it should be opened gradually. The sanders should be kept in good condition, and sand used when necessary to prevent the drivers from slipping. Where failure to start requires taking the slack, the throttle should be closed, the independent or straight air brake applied, the locomotive reversed, then the engine brake should be graduated off. Steam should be used if necessary, to close in all train slack. If the train must be backed to a more favorable place for starting, before reaching the point where the stop is to be made, and while still working steam, a brake pipe reduction of six or eight pounds should be made. The engineer should continue to work steam moderately until the stop is completed so as to have all slack closed in. The engine should be reversed, the release of the brakes started, and, at the time when experience indicates that the holding power of the rear brakes is ending, steam should be used but as carefully as consistent with starting the train and avoiding damaging shocks.

INDEPENDENT BRAKE USE

The independent brake should not be used in making passenger train stops. It should be applied and left in application position to prevent the locomotive from moving while taking coal or water, when oiling or doing work on the engine, during other than a short stop on a grade, and as explained, for taking slack. When releasing the independent brake, the valve handle should be moved to running position only. If the engine brake does not release, a "kick-off" with the automatic brake valve should be made.

TRAIN SLACK CONTROL

Smooth handling of passenger trains requires that slack must never be changed suddenly. The action of the brakes in changing the slack will be most severe at low speeds. Therefore, any heavy reduction should be avoided when speed is low. As the heavier the reduction the rougher will be the slack action, the split-reduction should be used

when commencing other than light applications. To help avoid objectionable slack action while applying the brakes on trains of more than eight cars, and where conditions will permit, the use of steam should be continued to hold the slack while the brakes are being applied.

Use of Sand While Stopping

Sand should not be used while braking on good rails, except in an emergency. Sand should be used to prevent wheels sliding on slippery rails. It should be started flowing before the brakes are applied in service braking, and immediately after the brakes are applied in emergency braking, continuing its use throughout the stop.

Complete Release

To completely release passenger train brakes (this does not include partial release with graduated release equipment), the automatic brake valve handle should be moved to release position, back to running position, and then, after waiting about seven seconds, "kick-off" should be made. How long to stay in release the first time depends mainly on the length of the train, but to an extent also on the main reservoir pressure. The proper length of time in release position is indicated when the brake pipe hand shows at least five or six pounds more after returning to running position than before moving from lap to release, and will vary from a second with a very short train to not more than 15 sec. with the longest train. If, after returning to running position, the brake pipe hand shows a pressure higher than the feed valve adjustment, release position was used too long. A release should not be attempted unless the pressure has been reduced at least seven pounds below the standard carried if the train has less than eight cars, and ten pounds for longer trains.

Stopping Without Graduated Release

Stopping without graduated release from usual speeds requires the two-application stop. The reasons for the two-application stop are the same as for the graduated release stop, and its method is to come as near to the graduated release stop as possible. The application should be made from usual speeds, as with a graduated release braked train; that is, while working steam, and using the "split-reduction," a reduction of about 15 or 18 lb. should be made, depending on the speed and grade. Then steam should be gradually shut off or reduced to a drifting throttle as required. This application should have been made at a point that will have reduced the speed to 12 or 15 m. p. h. when about 500 ft. from the stopping point. To release the train brakes, release position should be used for a time to suit the length of train, then move to running position until the brakes are released. For the second application, a reduction of about seven pounds should be made and followed with a little more when necessary, but endeavoring to avoid a total of over ten pounds. At the proper time, depending on whether the train consists of less than eight cars, the brakes should be released by using release position, then running position, followed by the kick-off. A heavy second application indicates too high speed at the first release or being too near the stopping point when the second application is started.

One-Application Method for Stops From Low Speeds

When making stops from low speeds, sufficient time should be allowed between shutting off steam and starting the brake application to permit the drawbar springs to re-act and start the slack in. An application has the same effect, due to the head brakes applying first. The effect on the slack is stronger at slow speeds. Therefore, the two acting together will produce very disagreeable shocks. Where the one-application method is being used, a split-reduction should be made, the first reduction not over six or seven pounds, which may be followed by further reductions if needed, but the first reduction should be made early enough to avoid making a total application of more than ten pounds when the stop is completed.

Emergency Stops

In an emergency, the brake valve handle should be moved quickly to emergency position and left there until the train stops. As an emergency application produces the quickest and highest braking force, it may cause shocks and slid flat wheels; hence may be used only to avoid injury to persons or damage to property.

Mountain Grade Braking

Retaining valves should be used when descending mountain grades whenever the brakes cannot be re-charged to within ten pounds of standard pressure. When operating with retaining valves, the application should be sufficient to insure a release, so that the train is retarded by the retaining valves, and not by sticking brakes. Graduated release must not be used when retaining valves are cut in, and when retaining valves are not cut in, not more than one release graduation may be used between complete re-charges. Release position of the brake valve should be used when re-charging, followed with the kick-off. Limiting the maximum speed to 30 m. p. h. on grades of 3 per cent to 3½ per cent, and 45 m. p. h. on grades of 2 per cent to 2½ per cent, provides for avoiding much of the trouble and annoyance from burned brake shoes, and an average margin of safety compared to level grade work.

Double Headers and Pushers

With more than one locomotive, the brakes should be controlled from the head locomotive and the air signal should be connected to and operate on it. On each other locomotive, the brake pipe should be cut into the train brakes, unless specifically excepted for certain pusher engines used for a short distance only, keep the automatic brake valve cut out, and its handle in running position, the compressor operating as usual, and, if had, the independent brake valve in running position. When a train is to have a helper locomotive coupled on ahead, the regular engineman will apply the train brakes with a 20 lb. brake pipe reduction before the helper couples on, leave them applied, and close the double-heading cock. The helper engineman will, after coupling, release the brakes and then make the brake pipe test. When a helper locomotive is to be cut off, its engineman will apply the brakes with a 20 lb. reduction and leave them applied. The regular engineman, then in charge, will release them and make the brake pipe test. The automatic brake valve on other than the head locomotive must not be cut in at any time or for any reason except for a plainly needed emergency application of which the head engineman is unaware or unable to make.

In starting a train with two locomotives ahead, commencing to use steam at the same time will cause severe shocks and damage, therefore the second engineman must not use steam until the head engineman has started the train or done all he can to this end. Braking with two locomotives ahead must be done with more than usual care, to avoid rough handling. This is due to the additional weight and slack at the head end, and, usually, the extra length of train.

With a pusher locomotive on the train, the head engineman will, when the train is to be started, allow the pusher engineman to endeavor to start it. When he has done so, or, being unable to, is using full power, the head engineman will carefully assist. When the train is being stopped, the pusher engineman will continue to use steam lightly until the stop is completed, so as to hold in the slack.

Backing Train Movement

When ready to make a backing train movement in which the back-up hose may or will have to be depended on for

more or less control, and on receiving the signal to back, the engineman will lap the automatic brake valve. The man at the rear end will, when the back-up signal is given, at once make a sufficient discharge from the back-up hose cock to insure a substantial application of the brakes. On the engineman noting by the air gage and by the brakes applying that this required reduction has been made, he will make the usual release and proceed to back up.

When making such backing movement, the automatic brake valve should be carried in running position so that, while permitting brakes to be applied, they will release and re-charge. The only exceptions are that the engineman will apply the automatic brake whenever necessary to insure the safety of the train, and will release the brakes in the usual manner, to guard against stuck brakes, as soon as any stop is completed.

Slow Downs

While still working steam, a first brake pipe reduction of about seven pounds should be made. After the exhaust closes, it should be followed by further reductions as required to obtain the desired low speed. To insure a prompt and certain release of all brakes, the reduction must total at least ten pounds before attempting to release. If less, the needed amount should be added just before releasing. At this and other similar times when releasing, release should not be made before the service exhaust ceases, and steam should not be used quickly, as either one or a combination of both will cause a severe jerk.

Brakes Sticking

One cause for brakes "sticking" or failing to release is attempting to release a lighter application than is here recommended. Another cause is some brakes re-applying on the locomotive or near the head end after releasing, and a failure to make the kick-off. Another cause for stuck brakes is a defective feed valve that allows the brake pipe pressure to vary from time to time, or a good feed valve that cannot regulate the pressure uniformly because of too little excess pressure, as a result of too low governor adjustment or a governor defect, or having less actual excess pressure than indicated, due to an error in the gage.

If stuck brakes are noted on a running train that is fully charged, the surest way to release it is to make a reduction of ten pounds, wait until the service exhaust ceases, then make the regular release, followed by the "kick-off." If an application is impracticable, they should be kicked off carefully—not long in release.

Overcharged Brakes

If a train of the older or P-M equipment is overcharged while running, the pressure can be reduced to the standard by applying and releasing the brakes one or more times without much re-charging. With the L-N equipment an overcharge of 5 lb. may be got rid of by reducing the brake pipe pressure to 60 lb. and releasing. If there is a heavier overcharge while running, the high pressure should be maintained until the next stop is completed, then the brake pipe pressure should be reduced to 60 lb., and after the brake pipe exhaust ceases, the brake pipe should be recharged as indicated on the brake pipe gage to 5 lb. below the original pressure to which the train was overcharged. This should be repeated until the re-charge pressure is the pressure to be carried.

Brakes Apply From Unknown Cause

Should the brakes apply from an unknown cause, it indicates that a conductor's valve has been opened, a hose burst, other serious leaks have occurred in the train, or the train has parted. In such cases the throttle should be closed immediately, the automatic brake valve lapped and left on lap until the train is stopped and the signal to release has been given.

The report is signed by T. F. Lyons, (N. Y. C.), chairman; Eugene Hartenstein, (C. & A.); Fredric Kerby, (B. & Q.); L. S. Ayers, and W. R. Garber, (K. & M.).

Discussion

M. O. Davis (A. T. & S. F.) advocated the use of the drifting throttle on long descending grades. He also recommended keeping the engine brakes released when making the running test starting out of terminals. Mention was made of the use of gas engine oil for lubricating the air cylinders of locomotive air compressors, and L. P. Streeter (I. C.) stated that while good results had been secured with automatic lubricators on regularly assigned engines, some difficulty had been experienced in securing successful operation where locomotives were pooled. F. B. Farmer (Westinghouse Air Brake Company) expressed the opinion that a maximum speed of 45 miles an hour on descending grades was too high. In reply G. H. Wood (A. T. & S. F.) stated that trains could be brought to a stop on descending grades from a speed of 45 miles an hour in the same distance that they could be stopped on level track from 65 or 70 miles an hour, and for that reason there was no more danger involved. Where cast iron wheels were used the high rate of speed might result in extensive heating of the wheels and in that case it would be necessary to limit the speed. In closing the discussion the chairman stated that the committee realized the speeds given were not applicable in all cases. They were intended rather to establish a maximum limit which could be deviated from according to the judgment of the traveling engineer.

Adjusting Tonnage of Slow Freight Trains for Average Speed of Twelve Miles an Hour

A railroad is most efficient when it produces the maximum ton miles per hour at the least expense consistent therewith. Engine efficiency should not be measured only by the percentage of possible tonnage handled per train, but preferably by the percentage of the maximum ton miles which can satisfactorily be handled per engine per month. Prof. W. J. Cunningham has well said:

"The time element has not generally been given the recognition it deserves. Ton miles per train hour as a unit is analogous to the horsepower unit, but instead of foot pounds per minute we use train ton miles per hour.

"The unit is the resultant of the train load multiplied by the speed in miles per hour. It is influenced favorably by an increase in load or in speed or in both, or by an increase in one factor proportionately more than a decrease in the other factor. . . . A large part of the expenses vary with the hours, hence it is important that the ton miles per hour shall increase. The capacity of the road in periods of peak-loads of traffic will vary with the ton mile production per train hour.

"The ultimate unit of freight car efficiency is: 'Net ton miles per car day.' Cars produce ton miles only when in motion. . . . We are all familiar with the reasons which make it difficult to get a larger daily mileage, but sometimes it may appear that we have become too complacent in accepting these reasons as a complete explanation. In times of car shortage, an increase of one car mile per day throughout the country would be equivalent to adding about 100,000 cars to those available for service."

Apparently this condition can be but slightly improved by increasing the speed of freight trains, because of the small percentage of the time that a car is in movement. But in this we may be deceived to a considerable extent, for in hundreds of instances which have come under the observation of every experienced railroad man, a small increase in the running

time of a train has resulted in the loss of a car day for each car in the train at destination, and frequently an aggregate loss of many car days, as well as per diem charges (which may again interest us soon) at intermediate stations, terminals and junctions. An increase in the time on road also means less time at terminals for repairs, or fewer trips per locomotive. Continued exhaustive strain on locomotive parts is expensive, as such usage invariably results in failure or excessive repair work and time out of service, which, in addition to the direct expense, necessitates an increase in locomotives owned or under lease.

Generally the fuel consumed per ton mile is reduced as the engine load is increased within a reasonable limit, but the wages per train crew per trip are increased in most instances, and frequently it has been found expedient to reduce train tonnage much below the possible maximum in order to clean up blockaded divisions and thus to best serve the public as well as the stockholders. Solely on a ton mile per hour basis a gradual gain in locomotive efficiency can be shown as speed increases to thirty or thirty-five miles per hour; but when the speed of freight trains averages more than fifteen miles per hour, many factors other than ton miles per hour affect the net economy.

During the period between 1890 and 1900 many railroads recognized the inadequacy of old methods of tonnage rating, and began the application of scientific and more logical methods, including the use of dynamometer cars, and adjusted tonnage. The real improvement thus brought about was so alluring that many operating officials lost balance, and failing to consider the immediate ill effects of overloading, went to an unprofitable extreme which still exists too frequently.

The probability of costly delays and accidents increases very rapidly as the length of train approaches the present maximum. The modern locomotive usually can keep a train moving which it cannot start without running out the slack with such force as to overstrain even the best draft gears and couplers. These parts are thus often subjected to destructive forces when long trains are handled over track with sharp variations in grade and while the slack in such trains is run in or out rapidly by air brake operations.

The probability of failure of trains to make expected movement, with consequent expensive road and yard congestion, increases rapidly as train tonnage closely approaches the possible maximum, even though there is no breakage or accident.

The modern locomotive attains its maximum fuel and thermal efficiency at speeds of not less than twelve miles per hour while working at approximately 25 to 30 per cent cut-off. As the cut-off is increased, the thermal efficiency decreases rapidly. At lower speeds, high degree superheated steam is not obtained, and the possible economy from this source is not realized. Superheater locomotives are capable of higher sustained speeds than saturated steam engines capable of dragging the same load, and full advantage should be taken of this superiority. On low grade divisions where it is necessary to half stroke or in many instances to nearly full stroke the engine most of the way between terminals, these features are worthy of careful consideration.

Fully as important as any of these considerations is the psychological effect on the train and engine crews. The present-day appeal is for co-operation, and we feel safe in saying that the extent to which co-operation will be forthcoming from the engine and train crews will be most gratifying if these employees are permitted and encouraged to "get over the railroad." Delays or depressingly slow movement exhaust patience and interest, and without interest and initiative on the part of engine and train crews the best performance cannot be obtained.

Aside from the psychological effect on employees, the time element in calculation of wages of train crews, at one time negligible, has become of great and increasing importance during the past few years. Let us not forget that an equitable relation between this item and the distance between terminals must be maintained. Speaking generally, shortening the distance between terminals, with the cost of consequent new terminals and abandonment or lessening in productiveness of many present terminal facilities, would increase charges to capital account and operating expenses excessively.

Adjusting tonnage properly is one big factor in good railroading. On a railroad handling many high-speed and important passenger, express and mail trains on the same tracks used by freight trains, the maximum possible tonnage per train will result disastrously; while on roads having four tracks, for example, a closer approximation to maximum possible tonnage may be satisfactorily maintained. Often on single-track roads where sidings are five or six miles apart, it is with difficulty that trains can make one hundred miles within the sixteen hours unless the average speed exceeds twelve miles per hour, excluding delays.

The committee is of the opinion that the volume and character of traffic, the physical characteristics of the roadway, and the locomotive equipment vary so greatly on the several roads and in many instances on the various divisions or sections of the same system, that the problem of determining the most suitable average speed and tonnage for freight trains generally must be solved for each division or district. Numerous carefully conducted road tests and expert analysis of performance and cost records should be made to determine the most economical operation.

In the table are shown records of the average freight train speeds for 23 different roads.

AVERAGE FREIGHT TRAIN SPEEDS

As Reported to the Operating Statistics Section in Item 10 (c) of Form C. S. I.

	Average freight train speeds, M. P. H.									
	1918					1919				
Railroads	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
A. T. & S. F.	12.4	12.4	12.6	12.5	12.6	12.4	12.9	13.1	13.0	13.2
B. & O. East Lines	8.4	7.6	8.0	8.3	8.1	9.4	8.7	9.4	8.9	8.7
B. & O. West Lines	9.7	9.5	9.9	8.5	10.4	11.0	11.2	11.2	11.2	9.9
Boston & Maine	10.9	10.6	10.4	10.4	10.3	10.6	10.5	10.7	10.9	11.0
C. & N. W.	11.2	11.2	11.1	11.3	11.4	11.2	11.1	11.0	11.1	11.3
C. B. & Q.	10.8	10.8	10.6	10.7	11.0	11.1	11.1	11.2	11.1	11.4
C. M. & St. P.	10.6	10.3	10.2	10.2	10.2	10.5	10.7	10.5	10.9	10.9
C. R. I. & P.	10.9	10.9	11.1	11.5	11.7	11.5	11.7	11.8	11.6	11.9
Erie	10.2	10.0	9.5	9.7	9.8	10.2	10.7	10.7	10.7	10.5
Gt. Northern	9.7	10.3	10.1	10.0	10.2	10.3	10.3	10.2	9.9	10.0
Illinois Central	11.9	....	11.5	11.5	11.5	11.5	11.1	11.3	11.5	12.0
Lehigh Valley	10.8	....	11.0	10.3	11.0	11.7	12.2	12.0	12.1	11.4
L. & N.	10.2	....	10.1	10.2	10.3	10.4	10.8	11.1	11.5	11.7
Mo. Pacific	10.0	....	10.3	10.2	9.6	9.8	9.5	9.4	9.7	11.0
N. Y. Central	9.7	....	9.2	9.6	10.1	10.6	11.7	10.8	10.8	11.0
N. Y. N. H. & H.	9.6	9.8	10.2	10.1	9.7	10.0	10.2	10.5	10.7	10.8
Northern Pacific	12.0	11.6	11.1	11.2	11.4	13.2	11.9	11.9	11.8	10.9
P. R. R. East Lines	8.8	8.9	8.9	8.3	8.0	8.3	8.9	8.8	9.0	9.2
P. R. R. West Lines	8.2	8.4	8.5	8.7	9.5	10.3	10.8	11.1	11.3	11.2
Southern	11.0	10.9	10.5	10.5	10.4	10.6	10.5	10.6	9.9	10.9
S. F. No. of Ashland	9.3	9.2	9.0	9.0	8.9	9.4	9.6	9.5	9.6	9.7
S. P. So. of Ashland	10.9	11.1	10.7	11.0	11.0	11.2	11.4	11.3	11.5	11.6
Union Pacific	15.6	....	14.8	13.9	14.5	14.7	14.9	15.5	14.8	14.7
Arithmetical average	10.5	10.2	10.8	10.3	10.5	10.9	11.0	11.0	11.0	11.1

Arithmetical average of averages, 10.8 miles per hour.

The above table will be supplemented by figures showing speeds for the months of June, July and August, and also by figures showing the average train load on various roads, in the proceedings to be published.

The report is signed by H. C. Woodbridge, chairman, E. F. Boyle, J. S. Meidroth and F. R. McShane.

The dynamometer car or testing plant should be used to determine whether the locomotive is properly designed and constructed, but tonnage rating should not be determined solely by the use of data thus obtained. Allowance must be made for slight defects in the locomotive, slightly inferior fuel, variation in efficiency of engine crews, and the multitude of variables in car and track construction and maintenance, all of which affect movement. For example—the movement of cars with wheels having worn treads requires much more power on curves than would be necessary if the original con-

tour of the wheel treads obtained. Cars with sufficient coupler side-play, anti-friction side bearings, well-lubricated center plates and journal bearings, also can be moved with less power than others of the same capacity not so prepared. The extent that the outside rail is elevated on curves, materially affects the movement of tonnage trains, etc.

We believe that with very rare exceptions an average speed of more than twelve miles per hour for tonnage freight trains can be attained and maintained without reduction in the properly determined maximum allowable tonnage, and that this tonnage will exceed the present rating in some instances, if the transportation and mechanical departments co-operate effectively in determining the proper rating, and if the officers of these departments, as well as those in the maintenance of way department, put into regular use every possible means for the elimination of delays.

Some of those furnishing information to the committee, assumed that the average freight train speed was at present considerably in excess of twelve miles per hour, and were fearful that the committee would advocate the reduction of the present average speed.

Discussion

F. P. Roesch (U. S. R. A.) discussed the comparative cost of handling tonnage with light and heavy engine loading giving statistics for stated conditions which showed that the heavier loading was the more economical. S. Kerby (B. & O.) expressed the opinion that locomotives are often overloaded and better results would be secured by reducing the tonnage and increasing the speed. L. R. Pyle (U. S. R. A.) brought out that enginemen in general do not like to haul heavy tonnage trains and are prone to state that the motive power is overloaded even though the loading is adjusted so that trains can be moved at reasonably good speed. Curves showing the variation of cost with varying tonnage prove conclusively that the net revenue increases with heavier loading. Mr. Pyle expressed the opinin that on many roads operating results could be greatly improved by eliminating delays and by keeping motive power in condition to perform economically. J. H. DeSalis (N. Y. C.) called attention to the fact that the cost of locomotive repairs, considered on a mileage basis, often exceeded the wages of the train crew and for that reason the effects of varying tonnage on the unit cost of repairs must be considered. Several members spoke on the necessity for co-operation between the traveling engineer, trainmaster and despatcher in order to reduce delays and increase the average speed of trains between terminals. The prevailing opinion was that there is little danger of overloading locomotives if the main journal bearings are kept in good condition.

An account of the latter part of the convention will be published in next week's issue of the *Railway Age*.

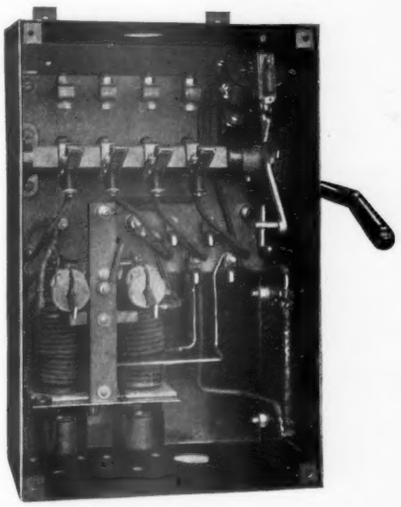
Enclosed Starters for Squirrel Cage Motors

Protection for both the motor and the operator is the principal feature of design in two new enclosed starting switches manufactured by the Cutler-Hammer Mfg. Co., Milwaukee, Wis.

One switch contains an overload protection unit, which is so designed that the circuit is not interrupted by a high initial starting current or by momentary overloads, yet gives protection against the continuance of harmful overloads. This inverse time element action is obtained by the retardation of a plunger in an oil dashpot. The time required for the relay to operate on any given overload condition may be varied by turning an adjusting screw.

The other switch is a three-pole fused starting switch, especially adapted for those motors which cannot be connected directly across the line when starting. A resistor with two sets of terminals allows the motor to be started on either 60 per cent or 75 per cent line voltage. When the motor has reached normal speed, the resistor is cut out of the circuit and the fuses inserted, which is accomplished without breaking the motor circuit. Therefore, the fuses do not carry the heavy starting current, and need be of no greater capacity than to insure proper motor protection.

Both types of starters are completely enclosed and are so designed that it is impossible to touch any live parts either while operating or while renewing fuses and making adjustments. The enclosing cases, which are arranged for conduit



Switch with Overload Protection. Cover Is Removed, Showing Contactors, Duplex Relay and Low-voltage Coil

wiring, prevent the accumulation of dust and grease on the contacts besides protecting the workmen from live parts. All contact posts and fingers are of standard *C-H* drum construction, easily inspected and renewed. Both types of switches are provided with low voltage protection coils.

Lowering the Panel of the Three-pole Starting Switch Deadens the Fuses and Makes Them Accessible for Renewal

To operate either type of starter, it is only necessary to raise and lower the handle, which can be locked to prevent unauthorized operation. The starters are made in various capacities for operating squirrel cage motors on potentials not exceeding 550 volts.

General News Department

The Division of Valuation of the Interstate Commerce Commission has served tentative valuations of the Chicago, Terre Haute & Southeastern, the Hawkinsville & Florida Southern and the Wadley Southern.

Pleasure travel has been very heavy in Western Canada this season, swarms of people coming from the United States. The hotel at Banff, Alberta, reports that it has refused sleeping quarters to 15,000 tourists this season.

The American Society for Testing Materials, which has hitherto had offices at the University of Pennsylvania, has now established society headquarters at the Engineers' Club Building 1316 Spruce street, Philadelphia.

The safety officers of the Northwestern region met at the Hotel Morrison, Chicago, on September 16 for the purpose of discussing plans for the "National Railway Accident Prevention Drive," to be held October 18-31, inclusive.

The American Association of Engineers has removed its national headquarters from 29 South La Salle street to 63 East Adams street, Chicago. The Chicago chapter of the association will retain its offices at 29 South La Salle street.

Indications of valuable oil deposits have been found adjacent to the line of the Chicago, Milwaukee & St. Paul in Montana and Washington. President R. M. Calkins states that boring for oil has been started in several spots near the road in Callam County, Wash., and in Musselshell County, Mont.

A plan for preventing strikes, similar to that embodied in the Canadian law, is provided in a bill, H. R. 9062, introduced in Congress by Representative Wood of Indiana. It provides for the appointment by the President of commissions to investigate labor controversies and would prohibit a strike or lock-out pending the conclusion of any investigation by a commission.

A tropical hurricane and tidal wave practically destroyed Corpus Christi, Tex., Port Aransas and Portland, and other nearby towns, on September 14, killing and injuring hundreds of persons; the railroads were not seriously affected. Relief trains sent from San Antonio, Brownsville and other points have already reached the affected districts with food and medical supplies.

The St. Louis, (Mo.) municipal bridge across the Mississippi river is leased (as regards its railway dock) to produce revenue, and so the city of St. Louis will have to pay taxes on the Illinois half of the bridge. This is a decision recently rendered in the County Court of St. Clair County, Ill. The Illinois half of the bridge has been valued at $600,000, and the 1918 taxes on this amount, which were in suit, are about $17,000.

A campaign for increased production in all industries has been started by the Chicago Association of Commerce in the shape of an appeal to workmen for intelligent co-operation in meeting the present industrial crisis. Statements of the problem and the necessity for increased production have been prepared by the Association of Commerce in such form as to be suitable for inserting in pay envelopes and others for display upon bulletin boards.

The Greenville & Western Railway, extending from Greenville, S. C., northward, 23 miles, to River Falls, evidently out of commission because of unsafe road bed, will resume business as soon as the new ties can be laid and certain trestles have been repaired, so as to make the track passable. This is the substance of a letter received by the South Carolina Railroad Commission and given out at Columbia. The road has been bought by W. H. Cook, of Duluth, Minn.

Representative McKeown has introduced in Congress a joint resolution providing that no railroad shall declare a dividend out of funds received from the government as compensation for the use of its property during federal control until the company shall have settled all valid final judgments rendered prior to federal control, including judgments from which appeals were pending at the time and became final subsequent to the taking over of the railroads by the government.

The United Mine Workers, in session at Cleveland, Ohio, on September 13, following an address by Glenn E. Plumb on government ownership of the railways and their operation by railway employees, adopted a resolution endorsing the Plumb Plan and pledging the support of the miners' organizations to obtain its enactment. The mine workers also invited the railroad brotherhoods to join them in an alliance for joint action, to be extended later into an economic alliance with labor organizations in other basic industries.

The executive council of the Federated Railway Shopmen of the Chicago district has called a national convention to be held at Chicago on September 25, to act upon the new wage scale granted to shopmen recently. According to statements made by officers of the executive council, steps will be taken at the convention to oust the grand lodge officers now conducting the wage negotiations with Railroad Administration officers at Washington. The convention was called by John D. Sanders and M. L. Hawver, who were the leaders of the recent unauthorized strike of shopmen in the Chicago district. So far as can be learned it has not been sanctioned by the international officers of the shopmen's brotherhood and was called without their knowledge.

Oil as fuel has long since supplanted coal on the lines of the Southern Pacific in Southern California; nevertheless the removal of the old coal handling facilities has not been entirely consummated. An instance of this recently was brought to light in the application of the Pacific Electric Railway Company to the Railroad Commission of the State of California for authority to dismantle and remove its long wharf at Port Los Angeles, Cal., and to take up the railroad tracks adjacent. This wharf was originally used by the Southern Pacific for a coal wharf. With the advent of oil as fuel the Southern Pacific transferred the principal part of its fuel handling in Southern Californa to the port of San Pedro and allowed the wharf to fall into disuse. A large part of the wharf was destroyed by a storm several years ago and the application says that the need for it no longer exists, and that it constitutes a menace to other wharves.

National Transportation Conference Plan Introduced as a Bill in Senate

Senator Frelinghuysen of New Jersey has introduced in the Senate a bill, S. 2998, embodying the plan for railroad regulation proposed by the National Transportation Conference, which was called by the railroad committee of the Chamber of Commerce of the United States.

Canadian Regulations for Train Markers

In order to standardize both equipment and operating practices, the Board of Railway Commissioners for Canada recently ordered that all passenger cars and cabooses hereafter constructed shall be equipped with marker sockets fixed at such elevation as will permit lamps and flags to be placed therein from the platform or floor of the car without the use of steps. Furthermore, according to the order, all passenger cars and cabooses now in use and not equipped with marker sockets in this position must be so equipped on or before

May 1, 1920. The action was taken because of the placing of marker sockets at the corners of the roofs in addition to the lower position on some of the passenger cars of the Grand Trunk.

Pyle National Exhibit

Through an oversight the report of the exhibit of railway supplies held in connection with the convention of the Railway General Foremen's Association, published in last week's issue, failed to mention the display of the Pyle National Company. This exhibit consisted of an 18 in. headlight case, an 18 in. special with glass reflector, an 18 in. special with wing side number doors, a K.2-generator, E.2-generator, E.-generator, 14 in. standard case, 1,450 lamp stand, Young valve gear, 32 U. and 33 E. connectors, 402 B. wheel, 1,602, 602 B wheels. This company was represented by J. Will Johnson, W. Miller, O. W. Young, W. Smith and T. P. McGinnis.

The M. W. Brotherhood

The United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers is holding a convention at Detroit, Mich., with approximately 2,000 delegates from the United States, Canada and the Panama Canal Zone present. The convention will last two weeks (September 8-20). The discussions are to be on the wage question, including its relation to living costs, and the probability of calling a strike unless wage demands and working agreements are not granted. The membership has already voted power to the executive committee to call a strike of the 600,000 men employed in maintenance of way and railway shop work. The latest reports from the convention indicate that the organization will abide by President Wilson's plea to postpone action on wages until the conclusion of the government's eorts to bring living costs to normal.

Signal Division A. R. A.—Annual Meeting

The first annual meeting of the Signal Division of the American Railroad Association, and the twenty-fourth annual meeting of the former Railway Signal Association, was held at the Congress Hotel, Chicago, on September 17-19, with 311 members, representing the railways of the United States and Canada, in attendance. An address of welcome was delivered by Harry B. Miller, prosecuting attorney for the City of Chicago, after which the regular business of the Division was taken up, and the committee reports were presented for discussion and action. The committees reporting and the subjects of their reports appeared on page 526 of the *Railway Age* for September 12. The entertainment provided consisted of luncheons on Wednesday and Thursday, a theater party on Wednesday night and an informal roundtable dinner on Thursday evening.

New Locomotives for Canadian Pacific

The Angus shops of the Canadian Pacific at Montreal, Quebec, recently completed 16 new locomotives which were used to draw the royal train carrying the Prince of Wales across Canada. Locomotives of this type, which are said to be the heaviest in service in the Dominion, are being turned out at a rate of one every five and a half working days. The total weight of each engine and tender in working order is 480,000 lbs., the cylinders are 25 in. by 30 in., the diameter of the driving wheels is 75 in. and the boiler carries 200 lb. steam pressure, giving the locomotive a tractive effort of 42,000 lb. The tender holds 8,000 imperial gallons of water and 12 tons of coal. The new locomotives are to be used in the passenger service of the Canadian Pacific between Fort William, Ont., and Winnipeg, Man., and between Smith Falls, Que., Trenton and Havelock.

McAdoo's Passes Discussed in Senate

The issuance of railroad and Pullman passes to W. G. McAdoo and to members of his family on the strength of his appointment as special counsel for the Railroad Administration for the state of New York was criticised in the Senate on September 15 by Senator Sherman of Illinois and defended by Senator Robinson of Arkansas, who said that Mr. McAdoo was serving without compensation and had served as director general without compensation during the war. "It is small business to make an attack on Mr. McAdoo under the circumstances," he said. In reply to a question by Senator Kellogg as to what services Mr. McAdoo performs as special counsel Senator Robinson said that according to his information they are largely advisory but far in excess of the value of the passes. Senator Kellogg said he doubted if there has been a time in years when so many people have been traveling on railroad passes "as in a time when no one should have a pass" and he declared that Congress ought to prohibit the issuance of passes at all.

Arbitration Rules

The Arbitration committee of the Mechanical Section of the American Railroad Association, calling attention to requests for interpretations and for arbitrations that are not prepared in accordance with the rules, promulgates the following general rules:

1. Requests for interpretation of the Rules of Interchange must be signed personally by the chief mechanical officer of the railroad or company. Questions received from car foremen, bill clerks, inspectors and others in a minor capacity, will not be considered. Many of the questions raised by these minor officers could and would be settled by the chief mechanical officer without being referred to the arbitration committee.
2. In presenting requests for interpretation, all facts in the case should be clearly stated, and, wherever possible, repair cards and other records involved should accompany the letter.
3. Where the question for interpretation is the result of a controversy with another company, the name of the other company should be given in order that the committee may, if necessary, request additional information from both parties to the dispute. Several requests for interpretation of the rules have been presented recently that were in reality disputes that should have been prepared as arbitration cases.
4. All cases presented for arbitration should be prepared in accordance with provisions of Interchange Rule 123. Both parties to the dispute should join in presenting the case. The entire file, including original repair cards, joint evidence certificates, etc., should accompany the prepared statements.

Lumber Men Consider Railroad Problem

Lumber men and the lumber industry generally have always taken interest in railroad problems; however, with the present complex situation, the railroad question has occupied even more of their convention time than formerly. The governmental relations committee of the National Lumber Manufacturers' Association, sitting recently in Chicago, adopted resolutions vigorously denouncing government ownership or operation of railroads, and proposed rigid long-and-short-haul provisions. At the summer meeting of the Northern Wholesale Hardwood Lumber Association held recently at Minneapolis, Minn., resolutions were adopted advocating the return of the railroads to their corporate owners not later than January 1, 1920, under proper regulation of the power of the Interstate Commerce Commission and also opposing any rigid long and short haul provision. The Northern Pine Manufacturers' Association, at Minneapolis, Minn., adopted resolutions opposing government ownership of railroads and government guarantees of railroad income, but favoring government loans to roads which are in financial distress.

Eastern Oregon Supports Senate Bill 360

The passing of laws which will assure the people of Eastern Oregon railroad rates now in effect under federal control and prevent transcontinental lines from being returned to pre-war schedules under private management has been urged in letters recently sent by H. H. Corey, a member of the Public Service Commission of Oregon to Senators Cummins, Poindexter, Kellogg, Pomerene and Robinson, who are the committee appointed to draft a law for the solution of the railroad problem. Mr. Corey's letter said in part:

"We of the eastern portion of this state are very much interested in Senate Bill 360, known as the "long-and-short-haul legislation." In view of the arbitrary manner in which the carriers in the past have discriminated against intermountain points, we feel that there can be no compromise on this measure. We hope that you may see the justice of granting at least equal railroad rates when the long-and-short-haul distances are disregarded because of competitive conditions. We think this is a large concession, for, as we view it, there is little justification for a carrier to haul several hundred miles further over mountain ranges at the same rate as for the shorter haul."

Mr. Corey has also urged financial, industrial and commercial organizations throughout eastern Oregon to prepare

and present strong endorsements of Senate Bill 360. He tells them that the practice of allowing lower rates from the east to the Pacific Coast, than for the shorter haul to intermediate points, not only denies to Eastern Oregon an equal opportunity in the manufacturing and jobbing business but has practically put out of business Oregon's coast ports. "Portland has suffered more from lack of water transportation than any other port of the Pacific Coast. There five transcontinental lines meet the potential boat rates, this making it impossible for them to operate; while the roads make up any deficits that may occur from this practice by assessing higher rates in the back haul territory. . . ."

The Heavy Hand and Its Lesson

Written under the imprint of a red hand and the caption above is the August accident record of the Pere Marquette and other roads under the jurisdiction of Federal Manager Frank H. Alfred. The first paragraph of the August bulletin, prepared by George Bradshaw, supervisor of safety, tells the cause of the red hand: "Well, boys, we have been hard hit this month. Seven of our men have made their last runs and entered the great terminal. William Ryan, a brakeman on the Canadian division fell from a car, was run over and killed; William Young, a laborer in Sarnia roundhouse was fatally injured in falling from the running board of an engine on which he was working and five employees of the Chicago-Petoskey division were killed in a collision between an extra freight and a regular passenger train. The cause of the collision was clear and undisputed—the entire crew of the freight simply forgot about the (opposing) passenger train and they came together at full speed on a sharp curve between stations."

The bulletin, with its moral, ends as follows:

"In the midst of life there is death, and in the best devised system of safety there is ever lurking the germ of a serious mishap. It has always been and always will be so long as men measure short of perfection. Our sacred duty is to so conduct and govern ourselves that this germ will be least likely to develop and multiply within us. A man in train service is never off duty and the book of rules is only one short paragraph in the great volume of his guiding principles."

Standard Steel Car Company Strikes Riot

A permanent committee has been appointed to represent the manufacturers of 36 states who attended the "Our Country First Conference" held in Chicago September 8 and 9, a report of which appeared in the *Railway Age* of September 12. This committee was announced recently by John M. Glenn, secretary of the Illinois Manufacturers' Association, under the auspices of which organization the conference was held. The committee, which consists of 16 men, among whom are four prominent railway and railway supply men, was selected to obtain a country-wide ratification of anti-red resolutions which are to be presented to Congress. Among these resolutions is one asking that the Interstate Commerce Commission be empowered to decide the wages of railway employees, as well as the rates for transporting freight and passengers. Following the performance of this duty, the committee will function as the agency of the manufacturers of the nation in propaganda work. The committee consists of: Charles Piez, president, Link-Belt Company, Chicago, chairman; E. B. Leigh, president, Chicago Railway Equipment Company, Chicago, and representing the National Association of Manufacturers, New York; Alba B. Johnson, president, Railway Business Association, New York; Samuel O. Dunn, editor, *Railway Age*, Chicago; George M. Gillette, Minnesota Employers' Association, Minneapolis, Minn.; Milo D. Campbell, National Milk Producers' Federation, Coldwater, Mich.; Thomas Creigh, American Institute of Meat Packers, Chicago; R. H. Rice, National Conference of State Manufacturers' Associations, West Lynn, Mass.; Charles S. Keith, National Lumber Manufacturers' Association, Kansas City, Mo.; W. H. Stackhouse, National Implement and Vehicle Association, Springfield, Ohio; H. H. Merrick, Mississippi Valley Association, Chicago; Dwight T. Farnum, American Institute of Industrial Engineers, St. Louis, Mo.; J. J. Phoenix, National Association of Hosiery & Underwear Manufacturers, Delavan, Wis.; S. Edward Davis, Butter and Egg Board, Chicago; George M. Verity, Ohio Manufacturers' Association, Columbus, Ohio, and John M. Glenn, secretary, Illinois Manufacturers' Association, Chicago.

Standard Steel Car Company Strikers Riot

The strike of workmen at the Hammond, Ind., plant of the Standard Steel Car Company, which has been in progress for approximately two months and which necessitated the calling out of eleven companies of the Indiana state militia several weeks ago, again assumed a serious aspect on September 9, when five strikers were killed and 15 wounded in a battle between 1,000 former employees of the company and the police. About two months ago the workmen at the plant went on a strike for increased wages and improved working conditions. The strike did not cause serious trouble until about three weeks ago, when rioting broke out between the strikers and the police and a number of persons were injured, as a result of which the Indiana state militia was ordered to Hammond to restore order. These troops were withdrawn about two weeks ago and since that time the strikers have been returning to their work in small numbers, thereby creating bad feeling among the men who refused to return. On September 9, about 200 men on their way to work were attacked by a crowd of 1,000 strikers, who in turn were ordered to disperse by police and special guards employed by the company. The rioting which ensued as a result of the attempts of the police to arrest the leaders of the mob resulted in the death of five of the strikers and the wounding of 15. Since this latter outbreak there has been no serious trouble reported and the strikers continue to return to their work in small groups.

Safety Committees' Work in June

The Safety Section, Division of Operation, of the United States Railroad Administration, has issued bulletin No. 7, showing that in the month of June, on the class 1 railroads, 158 employees were killed, and 10,000 were injured, as compared with 210 killed and 12,624 injured in the corresponding period of 1918. In June of this year the number of meetings held by general and local safety committees was 1,958, with an attendance of 32,020. The magazines, pamphlets and other printed matter distributed, numbered 1,095,808 pieces.

This bulletin contains detailed suggestions to supervisors of safety, on the government operated railroads, for making effective the "National Railroad Accident Prevention Drive" which is to be conducted from October 18 to October 31.

Committee meetings should be generally held during the ensuing four weeks and the drive definitely presented; there should be general inspections of tools, shops, buildings, and all railroad property; clean-up periods, short or long, and meetings early in October, to be managed by foremen and gang bosses; and pledge cards should be circulated. It is desired also that the co-operation of ministers, schools, public officers, etc., shall be secured and, in general, that all the methods heretofore proved useful in no-accident drives be employed now with the utmost possible efficiency. Men should be drilled, and every individual who can do anything in this direction should be assigned to a position for action.

The records of the results of the drive are to be made up on the basis of casualties per 100 persons in the service, comparison being made with the casualty records for the period October 1-15; and also with last year's October record. Reports will include all deaths or bodily injuries which are to be reported to the Interstate Commerce Commission.

The bulletin ends with an appeal to everyone to take personal pride in making the drive a success. The net decrease in casualties in the first half of 1919 was 19,110 employees (or 21,390, if all cases are included). Special care should be taken with new men in the service, who must be watched, advised and instructed.

Western Railway Club Opening Meeting

On Monday evening, September 15, the Western Railway Club, Chicago, held its opening meeting of the season at the Hotel Sherman, Chicago. R. M. Calkins, president of the Chicago, Milwaukee & St. Paul Railway Company, discussed the railroad situation from the standpoint of the corporation. He said in part that the railroad companies were willing to accept government regulation, fair and just wages to em-

ployees, pooling of cars when necessary and unification of terminals if the service rendered would be more efficient and economical, but in return it would be only just that the owners of railroad securities should be allowed a fair return on their investments. The problem is to ascertain where the money is to come from to finance the railroads, to extend their facilities and to give adequate service to the public if these securities do not offer a fair return, for insurance companies, banks and other financial institutions which have been purchasers of large quantities of railroad stocks and bonds, are now looking elsewhere for investments.

In regard to rates and the Cummins plan now before the Senate committee, Mr. Calkins said that it did not seem fair to allow a certain rate and then ask that all over and above a certain margin of profit be returned to the government, because it would certainly kill initiative on the part of those in charge of railroad properties and discourage the employees from attempting to save any thing over and above the fixed margin of profit. When a rate is fixed it stays fixed until changed by the rate making bodies, in contrast with the prices of a great many commodities which are shipped over the railroads at a fixed rate. For instance, beef, pork or mutton may vary five or six cents per lb. up or down even within a week's time, while the rate per lb. for shipping such meat remains the same. He stated that it was his belief that this high cost of living would adjust itself rapidly if the railroads were turned back to their owners as soon as possible, providing legislation was enacted which was fair and just to all.

Following Mr. Calkins' address, a paper on "Railway Train Lighting" was presented by E. Wanamaker, electrical engineer, Chicago, Rock Island & Pacific. This paper outlined the history, development and progress of train lighting since its early beginning in England in 1825.

National Association of Railroad Commissioners

The call for the thirty-first annual convention of the National Association of Railway and Utilities Commissioners, to be held at Indianapolis, Ind., on October 14, was given in the *Railway Age* last week, page 527. President Charles E. Elmquist expects that the committee reports to be presented at this convention will be unusually interesting and important. They will be taken up, so far as practicable and convenient, in the order in which the subjects are given below. Members are called upon to make special effort to be present, and to attend the session of the first day, when the opening address will be delivered by Hon. C. B. Aitchison. It is not safe, says the circular, to infer that the propaganda against state regulation is dead. "Congress must be thoroughly informed of the facts concerning our dual system of regulation and the necessity for its continuance. Justifiable pride in the accomplishments of the state commissions, a proper consciousness of our responsibilities to the public, and a clear appreciation of the complex problems of reconstruction, vitally relating transportation and utility services to our industrial fabric, make it imperative that every member of the association attend."

The twenty subjects to come before the convention, as indicated by the titles of the committees, together with the name of the chairman of each committee, are as follows:

Standardizing annual and special reports of companies; U. G. Powell, Nebraska.
Railroad rates in inter-mountain states; H. H. Williams, New Mexico.
Terminals and Warehouses; O. P. B. Jacobson, Minnesota.
Special war committee.
Public ownership and operation; J. S. Allen, Wisconsin.
Safety of railroad operation; C. C. McChord.
Safety of operation of public utility companies; W. D. B. Ainey, Pennsylvania.
Railroad service, accommodations and claims; C. C. Marshall, Ohio.
Service of public utility companies; C. B. Hill, New York.
Railroad rates; E. J. Bean, Missouri.
Public utility rates; T. W. D. Worthen, New Hampshire.
Car service and demurrage; O. P. B. Jacobson, Minnesota.
Express and other contract carriers by rail; E. O. Edgerton, California.
Statistics and accounts of railroad companies; U. G. Powell, Nebraska.
Statistics and accounts of public utility companies; C. E. Schreiber, Wisconsin.
Grade crossings and trespassing on railroads; H. H. Williams, New Mexico.
Valuation committee: W. A. Shaw, Illinois.
Capitalization and inter-corporate relations; H. P. Long, Louisiana.
State and federal legislation; V. E. Wilson, Nebraska.
Publication of commissions' decisions; A. R. Weed, Massachusetts.

Exhibitions at Traveling Engineers' Convention

The following is a list of the companies exhibiting at the convention of the Traveling Engineers' Association, Hotel Sherman, Chicago, September 16 to 19:

Air Reduction Sales Company, New York—Oxy-acetylene welding apparatus and gases. Represented by E. L. Mills, R. T. Feabody, S. H. Shaykin, M. M. Weist and B. A. Eliason.

American Flexible Bolt Co., Pittsburgh, Pa.—American flexible bolt, American reduced body staybolt, American marine hollow bolt, American hollow staybolt iron, American rivet. Represented by R. W. Benson, W. F. Heacock, L. W. Widmeier and W. W. McAllister.

American Locomotive Company, New York—Locomotives, Alco reverse gear, flexible staybolts, Alco throttle lever, Alco trailing truck, Alco lateral motion box, Alco rotary snowplow. Represented by W. J. Murray, G. G. Jones and G. P. Robinson.

American Steel Foundries, Chicago—Simplex clasp brake, Simplex couplers, Simplex shelf coupler pocket, Eclipse coupler yoke, Economy draft arm, steel side frames. Represented by W. G. Wallace, W. C. Walsh and J. H. Tinker.

Anchor Packing Co., Philadelphia, Pa.—Packings of all kinds for railroads and power plants. Represented by J. P. Landreth and J. C. Weedon.

Ashton Valve Company, Boston, Mass.—Ashton safety valves, pressure recording gages, locomotive steam and air gages, test gages, dead weight and gage tester, wheel press recording gage and whistles, protected dial gages. Represented by J. W. Motherwell, H. O. Fettinger and J. F. Gettrust.

American Arch Co., New York—Security brick arch and new double tube supported arch. Represented by J. P. Neff, A. W. Clokey, R. J. Himmeright, W. L. Allison, F. G. Boomer, J. D. Brandon, E. H. Cook, T. M. Ferguson, E. T. Mulcahy and W. W. Neale.

Baldwin Locomotive Co., Philadelphia, Pa—Locomotives. Represented by W. T. Sample and C. H. Gaskill.

Barco Manufacturing Company, Chicago—Engine tender connections, car steam heat connections, coach yard steam heat connections, freight train departure yard air connections, air reservior joints, Barco crosshead and shoe, Barco automatic smoke box blower fitting, Barco roundhouse blower and blow off connections. Represented by F. N. Bard, C. L. Melior and C. Thomas.

Bird-Archer Company, New York—Harter circulating boiler plate, boiler compound. Represented by F. B. Bird, C. W. Bird, L. F. Wilson, L. D. Bush and C. W. McGurn.

Boss Nut Company, Chicago—Boss lock nuts, bolts and rivets. Represented by J. A. MacLain, J. W. Fogg and W. G. Willcoxen.

Broschart Threadless Pipe Coupling Company, Trenton, Mo.—Train line couplings and accessories. Represented by J. L. Broschart.

Buda Company, Chicago—Model G. W. headlight equipment. Represented by H. Bayley, M. A. Ross and W. F. Davis.

Chamber Valve Company, New York City—Throttle valves. Represented by F. H. Clark.

Chicago Pneumatic Tool Company, Chicago—Pneumatic tools. Represented by L. C. Sprague, A. C. Andresen and C. W. Cross.

Commonwealth Supply Company, Richmond, Va.—Lewis power reverse gear. Represented by S. H. Lewis.

Crane Company, Chicago—Valves and fittings. Represented by F. D. Fenn.

Dearborn Chemical Company, Chicago—Water treatment for locomotive boilers. Represented by G. R. Carr, J. D. Purcell, W. S. Reid, I. L. Beebe, O. H. Rehmeyer, I. H. Bowen, L. P. Bowen, C. H. Everett, C. S. Murray, J. F. Roddy, H. Ross and T. H. Price.

Joseph Dixon Crucible Company, Jersey City, N. J.—Brake cylinder grease, front end finish, hub liner lubricant, general graphite lubricants. Represented by H. L. Hewson, F. R. Brandon and J. E. Simpson.

D & M Cleaning Process, Chicago—D & M cleaning process. Represented by D. J. Lewis and F. M. Hilgerink.

Detroit Lubricator Company, Detroit, Mich.—Three feed Detroit standard lubricator, with transfer filler attachment, one U. S. standard three-feed lubricator and Detroit automatic flange oiler. Represented by A. G. Machesney and A. D. Homard.

Electric Pneumatic Skid Company, Centralia, Ill.—Car stopping device for use in hump yards. Represented by L. W. Woley.

Edna Brass Mfg. Company, Cincinnati, Ohio—Lubricators, injectors, water glasses, coal sprinklers, boiler checks, line checks, locomotive appliances. Represented by E. O. Corey and H. A. Glenn.

Flannery Bolt Company, Pittsburgh, Pa.—F. B. C. flexible staybolt universal sleeve, Tate flexible staybolt. Represented by W. M. Wilson.

Franklin Railway Supply Company, New York—Franklin butterfly

fire door, Franklin lateral preventer, Franklin buffer, Economy engine truck, McLaughlin flexible joints, unit safety bar, Universal valve chest, Franklin automatic driving box wedge. Represented by J. L. Randolph, C. W. F. Coffin, S. G. Allen, J. L. Bacon, H. F. Ball, J. G. Berger, L. Brooks, R. G. Coburn, W. T. Comley, W. H. Coyle, R. F. D. Mott, H. M. Evans, P. Gillespie, C. H. Godfrey, W. T. Lane, F. W. Martin, C. F. Owens, J. A. Partington, F. R. Peters, C. F. Prescott, T. L. Reed, S. D. Rosenfelt, J. Sinkler, H. R. Stafford, R. H. Stickney, P. Weiler, P. Willis and C. L. Winey.

Galena Signal Oil Company, Franklin, Pa.—Represented by C. McNair, H. Hale, F. J. Walsh, W. F. Walsh, D. L. Eubanks, A. J. Poole, W. J. Walsh, W. E. Auger, C. B. Royal, J. P. Ferguson, J. F. Linahen, W. H. Foster, J. A. Graham, B. P. Corey, W. L. Trout, F. Smith, R. Webb, J. J. Dyer, L. Farmer, P. Stack, W. O. Taylor, M. Meehan, J. A. Roosevelt and J. S. Brown.

Garlock Packing Company, Palmyra, N. Y.—Packings. Represented by G. W. Sullivan and W. H. Cook.

Garrett-Callahan Company, Chicago—Magic boiler preservative. Represented by A. H. Hawkinson, W. Rollinson, O. A. Leath and E. V. Sackett.

A. W. Gillespie & Company, Chicago—Economy locomotive fire door. Represented by A. W. Gillespie and J. S. Seeley.

Hunt Spiller Manufacturing Corporation, Boston, Mass.—Piston valve bushings, piston valve packing, piston valve bull rings, cylinder packing, crosshead shoes, driving box shoes and wedges, knuckle pin bushings, side rod bushings. Represented by J. G. Platt, V. W. Ellet, E. J. Fuller, C. Galloway and F. Hartman.

H. G. Hammett, Troy, N. Y.—Staytite metallic piston rod and valve steam packing.

Hanna Locomotive Stoker Company, Cincinnati, O.—Locomotive stokers. Represented by W. T. Hanna, F. E. Cornwell, L. J. McConnell and J. R. Gallagher.

Henry Manufacturing & Grease Cup Company, Terre Haute, Ind.—Henry automatic grease cup. Represented by M. Henry.

International Correspondence Schools, Scranton, Pa.—Correspondence courses. Represented by E. M. Sawyer, H. T. Pettinger, C. Z. Meyers and J. W. Harding.

H. W. Johns-Manville & Company, New York—Air pump and throttle packing industrial and brake cylinder packing sets, insulation for pipes, boiler and locomotive lagging, brake slack adjuster. Represented by J. E. Meek, J. C. Younglove, P. C. Jacobs, P. R. Austin, E. H. Willard, D. L. Hennings, L. S. Wilbur, H. M. Butters, G. Christenson, J. H. Trent and H. Flannagin.

Lewis Valve Company, New York—Lewis automatic drifting valve. Represented by F. M. Patterson.

Locomotive Firebox Company, Chicago—Nicholson thermic syphons for locomotive fireboxes. Represented by J. L. Nicholson, S. Hawley and J. T. Anthony.

Chas. R. Long, Jr., Company, Louisvile, Ky.—Railway paints, locomotive black varnish, Staybrite front end paint, Lo-kost front end paint, Lovico process freight car paints, passenger car and locomotive enamels. Represented by Harry Vissering, G. S. Turner, W. H. Heckman and J. M. Monroe.

The Leslie Company, Lyndhurst, N. J.—Pressure regulators and removable coupling nuts. Represented by S. I. Leslie and J. J. Cizek.

Locomotive Feed Water Heater Company, New York—Model of feedwater heater and pump. Represented by W. L. Allison, E. A. Averill and W. T. Bennison.

Locomotive Lubricator Company, Chicago—Schlacks' system of force feed lubrication for locomotive valves and cylinders. Represented by C. W. Rudoph, O. H. Neal and W. J. Schlacks.

Locomotive Stoker Company, Pittsburgh, Pa.—Duplex stokers. Represented by C. D. Barrett, W. S. Bartholomew, J. J. Byrne, O. B. Capps, W. G. Clark, D. F. Crawford, J. J. Hannahan, E. Prouty, L. V. Stevens, O. W. Deitrich, H. C. Cale, A. N. Willsie, D. T. Carlisle, E. Ryan, R. C. Jordan, E. G. Haskin and F. H. Tryon.

Locomotive Superheater Company, New York City—Pyrometer for superheater locomotives. Represented by G. E. Ryder, R. R. Porterfield, R. M. Osterman, K. E. Stillwell, G. Fogg, G. E. Crisp, B. R. Bristol, B. G. Lynch, H. Spicer, J. E. Monroe, H. B. Oatley, R. J. Van Meter, F. Schaff, W. Boughton, A. C. Louden, W. A. Buckbee, B. Browne, A. C. McLaughlin, S. MacDonald, C. Wickham, W. Tawse, J. Bell and H. C. Bell.

Lovejoy Tool Works, Chicago—Cone bearing journal jacks. Represented by W. H. Dangel.

Manning, Maxwell & Moore, New York—Ashcroft Manufacturing Co., gages, Hancock inspirator, Hancock boiler tester, boiler checks, appliances. Consolidated safety valve. Represented by C. L. Brown.

Metal & Thermit Corporation, New York—Thermit and alloys, compounded with chromium, nickel, iron, titanium and manganese; thermit process for pipe welding, thermit welding equipment. Represented by W. H. Moore, H. S. Mann and C. D. Young.

W. H. Miner, Chicago—Draft gears, side bearings. Represented by J. R. Mitchell and B. S. Johnson.

Mudge & Company, Chicago—Mudge-Slater spark arrester. Represented by J. K. Vanatta and G. W. Bender.

Nathan Manufacturing Company, New York—Injectors, lubricators, boiler checks, gage cocks, water gages, boiler washer and tester. Represented by O. Best, W. R. Walsh, W. Brumble, J. Arn, H. Gettys, J. Lemley, F. C. Davern and R. Welsh.

National Railway Devices Company, Chicago—Shoemaker vertical fire doors. Represented by J. G. Robinson, E. J. Gunnison and F. Lind.

National Boiler Washing Co., Chicago—National hot water locomotive boiler washing system. Represented by D. Anderson.

National Tube Co., Pittsburgh, Pa.—National pipe and tubes.

National Waste Co., Chicago—Packing and wiping waste. Represented by G. Green.

New York Air Brake Co., New York City—Forsyth automatic air and steam connector, air pump strainer, type L, automatic brake valve, leather and rubber gaskets for air brake equipment, pipe fittings for railroad air brake service. Represented by G. Kleifges, W. J. Elliot, H. Yohn, W. Owens and L. W. Sawyer.

Ohio Injector Company, Chicago—Chicago lubricator, Chicago flange oiler, Chicago non-lifting injector, Chicago U. S. Standard special B injector, Ohio water glass protector, Ohio lifting injector, Chicago automatic drifting valve. Represented by A. C. Beckwith, F. W. Edwards, W. S. Furry and F. B. Farnsworth.

Okadee Company, Chicago—Okadee front end hinge, locomotive blow-off valves, tender hose couplers, Okadee water gage, glass and round-house washout valves. Represented by A. G. Hollingshead, G. S. Turner and W. H. Heckman.

O'Malley-Beare Valve Company, Chicago—Multiplate valves, Perfection self-grinding gage cocks, water glass drains, special locomotive valves. Represented by T. O'Malley, E. O'Malley, J. E. Brown, J. N. Gallagher, J. Pigott, F. Hitesman and W. Morris.

Paxton-Mitchell Company, Omaha, Neb—Paxton-Mitchell piston rod packing and Leighton cylinder packing rings. Represented by J. L. Paxton and F. J. Myers.

Pyle-National Company, Chicago—Headlight cases, with glass reflector and wing side number doors, K.2-generator, E.2-generator, E.-generator, 14-inch standard case 1450 lampstand, Young valve gear, 32 U. and 33 E. connectors. Represented by J. W. Johnson, W. Miller, O. W. Young, W. Smith, J. Reese, C. LeFevre, R. L. Kilker, T. P. McGinnis, C. P. McGinnis and G. Haas.

Pilliod Company, Swanton, O.—Baker valve gear. Represented by E. J. Barnett, W. H. Bellmain, K. J. Eklund and R. H. Weatherly.

Pocket List of Railroad Officials, New York City—The Pocket List. Represented by C. L. Dinsmore and J. Alexander Brown.

Railway Review, Chicago.

Schroeder Headlight & Generator Company, Evansville, Ind.—Headlight with switch lens and special lens for diffusing light on yard and switch engines. Represented by J. H. Schroeder, A. H. Varney, E. B. Barris, C. E. Kinnaw and F. Edmunds.

Wm. Sellers & Company, Inc., Philadelphia, Pa.—Feed water equipment and special devices. Represented by J. D. McClintock and J. R. New.

Simmons-Boardman Publishing Company, New York City—*Railway Age*, Railway Mechanical Engineer, Locomotive Dictionary, Car Builders' Dictionary. Represented by A. F. Stuebing, J. M. Rutherford and F. H. Thompson.

Sargent Company, Chicago—Ironclad water glass protector, Sargent safety water gage, E. S. E. Reflex gage, E. S. E. water glass cocks, Renn gage cock, Loodige quick acting blower valves, E. S. E. automatic feed grease cup, Martins self-locking grease plug. Represented by G. S. Garren and K. C. Robbins.

Southern Locomotive Valve Gear Company, Knoxville, Tenn.—Southern valve gear. Represented by E. L. Challman.

Smith Adjustable Hub Plate Company, Chicago—Smith adjustable hub plate. Represented by A. J. Sams and R. G. Long.

Standard Stoker Company, New York—Locomotive stokers. Represented by J. A. Carey, H. L. Walker and F. M. Morley.

W. S. Tyler Company, Cleveland, O.—Draftac spark arrester. Represented by J. H. Jackson and A. D. Busch.

Universal Equipment Company, Toledo, O.—National Gregory automatic fire door.

Universal Packing & Service Company, Chicago—Spring journal box packing. Represented by L. Rowe.

United States Metallic Packing Company, Philadelphia, Pa.—King type single and tandem piston packing, King type air pump packing. Represented by M. B. Brewster, H. E. Hyslop, L. B. Miller and J. Luscombe.

Vapor Car Heating Company, Chicago—Locomotive cab heating arrangement; pressure reducing valves, steam gages, traps and metallic straight port steam joints. Represented by E. C. Post.

Harry Vissering & Co. Chicago—Viloco fire door, Crescent metallic piston rod and valve stem packing, sanders, duplex sander valves, bell ringers and Viloco steam compressor governors. Represented by G. S. Turner, J. M. Monroe and W. H. Heckman.

J. H. Watters, Anniston, Ala.—Locomotive track sanders, feed water strainer valves. Represented by J. H. Watters.

Western Railway Equipment Company, St. Louis, Mo.—Linstrom syphon. Western M. C. B. malleable iron journal wedge and security dust guard. Represented by R. M. Hoerr, R. L. Langtim and S. H. Campbell.

Westinghouse Air Brake Company, Pittsburgh, Pa.—H.-6 brake valve with collapsible equalizing piston, No. 4 brake pipe vent valve, M. C. B. hose couple gage, hose coupling packing ring gages, triple valve shipping caps, auxiliary devices governor, freight brake cleaners and testing outfit, brake cleaning tools, air compressor strainer. Represented by W. S. Bartholomew, C. J. Ohlmstead, J. S. Y. Fralich, J. B. Wright, L. Wilcox, L. M. Carleton, A. K. Hohmyer, F. H. Parke, A. L. Berghane, W. Sleet, A. G. Houston, F. B. Farmer, J. A. O'Malley, H. H. Burns and F. B. Johnson.

At a meeting of the Railway Equipment Manufacturers' Association, held on Tuesday, the following officers were elected: President, C. W. Floyd Coffin, Franklin Railway Supply Company; Vice-President, David L. Eubank, Galena Signal Oil Company; Secretary, Fred W. Venton, Crane Company; Treasurer, Charles L. Brown, Manning Maxwell & Moore.

Checking Percentages by Chart

An article and chart by William Wyer was published in our issue of June 27, on page 1826. The caption to this chart was through an error placed at the side of the chart instead of at the bottom of the chart. Thus, in other words, to read the chart according to the directions of the caption, the page should be turned horizontally instead of held vertically

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$151,094	$69,004	$234,610	$38,412	$49,589	$1,728	$86,281	$9,797	$188,117	80.18	$46,117	$46,492	$12,229	$34,237
Alabama Great Southern	312	589,679	289,340	906,084	176,272	196,131	11,521	322,098	19,481	732,308	80.82	173,776	23,561	150,199	—95,008
Ann Arbor R. R.	301	323,448	71,819	416,556	39,262	51,346	4,138	203,299	9,034	307,232	73.75	109,324	16,700	92,576	33,549
Arizona Eastern	377	276,781	37,880	329,134	64,570	49,454	2,543	100,641	17,006	234,097	71.12	95,036	16,282	78,697	30,741
Atchison, Topeka & Santa Fe	8,665	9,819,183	4,318,963	14,833,620	1,906,298	3,125,406	165,856	5,170,782	242,814	10,561,981	71.20	4,271,640	572,426	3,965,330	—2,420,894
Atlanta & West Point	93	88,813	101,318	215,621	27,929	38,498	3,117	80,887	7,493	161,971	75.11	53,650	8,500	45,150	—27,157
Atlanta, Birmingham & Atlantic	639	334,703	97,570	449,934	106,371	109,875	6,601	231,261	11,739	465,893	103.54	—15,959	16,000	—31,973	—36,354
Atlantic City	177	91,158	461,722	570,708	38,434	54,041	2,705	233,098	1,295	329,680	57.76	241,028	12,000	229,028	32,086
Atlantic Coast Line	4,874	2,982,980	1,361,441	4,612,693	749,180	1,066,499	61,882	2,201,730	102,860	4,205,063	91.16	407,630	220,000	186,571	—986,747
Baltimore & Ohio Chicago Terminal	90	.....	3,071	210,134	26,914	46,191	1,120	109,745	6,151	195,499	93.03	14,634	26,542	—12,026	47,713
Baltimore & Ohio	5,151	12,171,529	3,028,920	16,320,566	2,702,540	4,497,787	181,424	6,415,107	362,271	13,782,445	84.44	2,538,121	339,742	2,197,326	—2,382,324
Baltimore, Chesapeake & Atlantic	87	101,824	68,416	174,429	15,889	173,449	1,292	99,904	3,415	293,949	168.52	—119,521	3,161	—122,681	155,349
Bangor & Aroostook R. R.	632	231,425	69,885	319,127	73,021	125,410	4,901	139,263	12,238	360,710	113.03	—41,583	21,000	—64,101	—80,503
Beaumont, Sour Lake & Western	118	77,849	30,915	114,035	35,905	17,913	2,112	51,894	5,796	113,619	99.63	416	2,700	—2,293	—8,052
Belt. Ry, Co. of Chicago	31	.....	.....	355 156	36,849	52,064	425	167,464	1,172	263,973	74.32	91,183	15,682	75,500	22,062
Bessemer & Lake Erie	217	1,370,662	38,128	1,433,648	163,008	355,997	12,777	376,934	19,179	934,940	65.21	498,709	14,500	484,209	—446,504
Bingham & Garfield Ry	37	81,870	1,624	85,926	41,628	37,231	1,325	23,225	3,620	110,159	128.20	—24,233	6,232	—30,465	—221,003
Birmingham Southern R. R.	29	35,594	.....	42.714	5,048	5,801	730	22,332	3,408	37,318	87.36	5,395	—2,733	7,916	—79,644
Boston & Maine	2,258	3,815.721	2,133,986	6,518,287	916,573	1,167,204	57,279	3,214,197	168,616	5,557,268	85.25	961,020	180,086	780,726	—661,778
Buffalo & Susquehanna R. R. Corp	296	200,326	6,798	224,345	53,093	96,496	1,527	66,472	7,247	224,836	100.22	—490	3,250	—3,740	—26,444
Buffalo, Rochester & Pittsburgh	589	1,066,021	141,638	1,253,044	189,328	402,235	15,561	532,519	30,740	1,172,745	93.59	80,299	27,000	53,222	—276,213
Canadian Pacific Ry. Lines in Maine	233	87,617	33,934	131,291	76 573	27,511	2,456	68,704	3,458	178,703	147.33	—47,412	11,000	—58,412	—22,915
Carolina, Clinchfield & Ohio	282	485,772	40,618	541,427	58,680	97,692	5,173	145,662	14,171	321,339	59.35	220,088	16,300	203,724	119,685
Central New England	301	545,907	25,378	594,331	140,329	66,968	2,834	213,563	12,566	437,478	73.61	156,853	16,000	140 813	—12,204
Central of Georgia	1.918	1,163,364	622.973	1,930 223	349,942	318,913	38.834	784,416	60,496	1,555,138	80.57	375,085	65,580	308,804	—121,479
Central Ry. Co. of New Jersey	685	3,199,271	888,506	4,352.061	447,121	852,788	38,620	1,789,750	117,129	3,267,556	75.08	1,084,512	157,401	927,096	—852,437
Central Vermont Ry	411	397,239	91,611	532,575	122,572	121,608	12,290	294,638	17.213	571,146	107.24	—38,571	17,400	—55,975	—83,942
Charleston & W. Carolina	342	171,489	37,952	220 526	37,182	41,889	5,310	116,000	2,695	203,276	92.17	17,251	8,500	8,750	—34 072
Chesapeake & Ohio	2,509	4,903,511	1,396.827	6,665,251	1,002,227	1,524,202	38,429	2,376,296	112,177	5,087,467	76.32	1,577,784	158,400	1,419,085	—814,934
Chicago & Alton	1,050	1,498,778	600,310	2,220,876	366 493	579,327	23,438	856,943	49,875	1,889,707	85.08	331,169	55,500	275,496	—497,153
Chicago & Eastern Illinois	1,131	1,569,281	440.701	2,154,410	336,962	708,344	20,637	860,039	44,029	1,981,051	91.95	173,353	79,500	93,382	—622,523
Chicago & Erie	269	671,577	119.214	855,385	135,384	120,853	10,948	456,903	27.794	754,118	88.16	101,266	27,678	73,582	—120,642
Chicago & North Western	8,090	8,791,354	3,485,832	13,321,598	1,931,093	2,262,259	82,004	5,152,128	244,303	9,772,014	73.35	3,549,584	475,000	3,073,621	—899,075
Chicago, Burlington & Quincy	9,372	8,636,011	3,447.556	13,068.386	2,249,036	2,423,780	88,924	4,706,970	316,723	9,917,013	75.88	3,151,374	463,118	2,688,059	—1,568,953
Chicago Great Western	1,496	1,156,951	575,173	1,857.565	287.972	372 055	29,968	921,936	45,341	1,470,635	79.16	386,930	54,975	331,629	80,128
Chicago, Indianapolis & Louisville	657	711,795	248,411	1,052.075	142,432	250,966	16,214	465,320	25,592	911,030	86.59	141,044	47,340	93,384	—27,157
Chicago Junction Ry	12	.....	.....	325,131	49,847	51,249	163	218,706	7,022	326,987	100.57	—1,857	2,129	—3,985	—32,808
Chicago, Milwaukee & St. Paul	10,648	8,510,393	3,005,284	12,617,449	2,292,982	4,266,828	120,425	5,731,558	334,319	12,838,955	101.76	—221,507	458,809	—682,614	—2,962,237
Chicago, Peoria & St. Louis	247	101.595	26,165	136,421	44,638	73,228	3,349	83,703	8,444	213,362	156.39	—76,940	6,100	—83,041	—87,663
Chicago, Rock Island & Gulf	474	259,097	94,342	374,593	56,362	63,192	7,566	157,081	11,716	297,506	79.42	77,087	13,155	63,919	4,533
Chicago, Rock Island & Pacific	7,594	6,362,183	3,005 740	9,847,273	1,575,222	1,928,404	123,232	3,916,607	194,951	7,781,939	79.02	2,065,335	356,719	1,708.075	—203,540
Chicago, St. Paul, Minneapolis & Omaha	1,749	1,529,131	692,186	2,352,013	422,198	398,137	23,857	1,003,764	60.206	1,912,936	81.33	439.076	103,577	334,844	—306,327
Chicago, Terre Haute & S. E.	374	302,745	22,084	339.193	61 129	137,255	2,278	132,336	8,236	342,696	101.03	—3,503	14,500	—18,003	—201,033
Cincinnati, Indianapolis & Western	321	187,345	56,416	266,853	47,994	86,934	7,594	133,876	14.423	291,806	109.35	—24,953	10,261	—35,214	—32,794
Cincinnati, Lebanon & Northern	76	93,967	9,550	119,083	8,705	18,873	1,484	47,185	1,330	77,179	64.81	41,505	4,404	37,101	17,780
Cincinnati, New Orleans & Texas Pacific	337	797,214	315,016	1,168,391	208,794	465.123	20,468	505,989	16.435	1,218,956	104.33	—50 566	37,000	—87,658	—477,073
Cincinnati Northern	251	216,463	22,106	244.913	31,014	52,085	2,321	90,876	5,337	181,633	74.16	63,279	8,500	54,779	—30,393
Cleveland, Cincinnati, Chic. & St. Louis	2,395	4,212,350	1,598,307	6,255.155	707,229	1,227,355	83,163	2,499,305	128.220	4,701,972	75.16	1,553,183	185,000	1,367,805	—1,421,719
Colorado & Southern	1,099	765,442	267,959	1,094,279	213,123	236,405	7,309	365,478	32,150	862,134	78.78	232,145	47,000	185,008	—45,531
Colorado & Wyoming Ry	41	21,655	1,285	84,031	13,272	18,159	388	38,659	3,725	74,203	88.30	9,828	4,000	5,828	16,240
Cumberland Valley	163	396.406	82,785	503,056	60,777	97,723	6,850	178,479	10,712	355,348	70.63	147,709	7,382	140,327	—69,794
Delaware & Hudson Co	875	2,775,851	302,569	3,258 572	432.525	803,133	18,221	1,316,540	115.839	2,715,343	83.32	543,229	60,000	482,530	—187,894
Delaware, Lackawanna & Western	955	4,495,926	1,231,050	6,342,043	760,732	1,245,722	53,646	2,392,140	111,480	4,631,029	73.02	1,711,014	318,427	1,391,552	—954,923
Denver & Rio Grande R. R.	2,593	1,880.898	791,265	2,840 670	515,673	574,350	23,123	856,836	70,880	2,100,926	73.95	739,744	115,000	624,229	267,651
Denver & Salt Lake R. R.	255	229,344	61,223	296,925	106,959	74,964	1,084	153,984	5,321	342,312	115.28	—45,387	9,000	—54,395	—56,986
Detroit & Mackinac	381	115,534	38,256	161,252	16.685	28,075	111	60,555	1,950	106,872	66.27	54 380	8,439	45,940	26,101
Detroit, Toledo Shore Line	61	207,246	.....	209,760	32,213	37 097	2,386	53,228	10.590	135,514	64.60	74,246	8,250	65,996	10,510
Detroit, Toledo & Ironton	454	281,804	16.018	313,391	93,193	85,170	2,559	131,229	13,300	325,450	103.85	—12,060	5,641	—17,777	—92,307
Duluth & Iron Range	292	1,214,526	24,252	1,318,816	97.470	114,183	287	236,703	14,803	464,043	35.19	854,772	65,646	789 045	—319,393
Duluth, Missabe & Northern	412	3,220 114	47,654	3,342,896	174,847	130,314	2,523	423,511	22,467	754,918	22.58	2,587,979	168,250	2,419,730	—473,938
Duluth, South Shore & Atlantic	598	320,191	124.145	475.606	121.810	68,441	5,340	181,291	8,731	391,852	82.39	83.753	70,000	63,695	—113,548
Duluth, Winnipeg & Pacific	178	121,185	23,557	148.679	42,058	31,405	3,595	65,691	6.759	150,256	101.06	—1,577	8,307	—9,883	—2,988
East St. Louis Connecting	3	.....	.....	119.099	18.000	12,149	252	67,293	3.088	101,127	84.91	17,973	2,000	15,973	18,646
El Paso & S. W.	1,027	677,957	169,139	896,157	272,466	196,070	9.883	281,682	26.506	793,955	88.59	102,202	48,363	53,799	—463,380
Elgin, Joliet & E.	831	1,468,993	42	1,699,458	131,839	326,043	7,323	568,856	24,519	1,058,564	62.28	640,895	64,624	576,356	—353,132
Erie R. R.	1,989	5,813,241	1,417,286	7,868.833	974,540	2,117,503	73,871	3,809,875	189,699	7,211.624	91.64	657,209	269.475	386,641	—147,396
Florida East Coast	764	443.915	185,044	703.535	123,160	127,706	6,924	279,439	18.975	565,506	80.38	138,028	61,084	76,853	36,316
Fonda, Johnstown & Gloversville	88	43,821	74,870	123,673	15.821	9,155	1,072	51,649	6,490	84.188	68.07	39,485	4,900	34,585	1,940
Ft. Smith & Western	253	92,557	29,924	130,285	24,210	30,603	3,786	43,709	7,133	110,178	84.56	20,107	5,000	15,105	3,259

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Ft. Worth & Denver City Ry	454	$609,872	$337,139	$977,489	$75,590	$174,479	$4,087	$321,455	$23,759	$602,371	61.82	$375,117	$19,250	$355,835	$217,456
Ft. Worth & Rio Grande Ry	235	60,210	56,705	124,458	25,223	18,584	2,080	53,859	4,624	104,370	83.85	20,088	2,984	17,103	—13,389
Galveston, Harrisburg & San Antonio	1,381	1,348,942	512,015	1,929,827	252,130	403,257	17,936	687,196	51,546	1,431,233	74.16	498,593	52,892	445,157	—266,052
Galveston Wharf Co	13	.....	.....	80,419	53,546	1,762	4	31,848	2,009	79,330	98.64	18,911	15,400	—34,311	—112,605
Georgia R. R	328	300,988	157,923	484,978	50,941	73,812	5,962	247,744	19,732	398,394	82.14	86,583	5,950	80,633	—270,880
Georgia Southern & Florida	402	216,973	93,361	337,828	44,190	54,070	5,745	168,188	11,429	283,824	84.01	54,004	13,732	40,243	18,192
Georgia & Florida	348	59,513	24,474	88,975	27,542	22,991	2,071	53,094	5,924	111,623	125.45	—22,646	4,200	—26,852	31,039
Grand Rapids & Ind	569	470,422	232,611	758,146	66,138	156,936	11,222	346,357	21,867	606,945	80.06	151,201	25,951	125,247	—59,018
Grand Trunk Western Lines	1,001	1,372,698	362,543	1,878,237	233,340	361,850	18,498	849,259	51,343	517,548	27.56	360,690	50,140	310,503	—92,544
Great Northern Ry	8,244	7,365,972	2,049,630	10,226,746	1,510,691	1,452,645	64,894	3,661,020	152,056	6,971,532	68.16	3,255,214	282,192	2,972,376	433,750
Gulf & Ship Island R. R	307	162,779	62,046	237,418	48,812	52,684	4,098	83,092	11,259	200,216	84.33	37,202	12,206	24,823	—73,207
Gulf, Colorado & Santa Fe	1,937	1,171,918	482,070	1,740,137	400,429	334,315	21,426	708,112	47,492	1,511,765	86.87	728,373	71,168	156,543	—304,446
Grand Trunk Lines in New England	172	85,481	49,416	154,020	87,734	33,409	3,360	133,372	10,817	281,733	182.91	—127,713	14,500	—142,213	—84,340
Gulf, Mobile & Northern	424	188,234	52,333	251,377	48,112	49,036	5,284	108,048	10,596	220,404	87.67	30,973	11,627	19,344	—872
Hocking Valley	350	1,120,055	120,397	1,321,946	103,274	333,060	5,975	387,391	21,945	851,570	64.41	470,375	—21,718	492,093	—116,623
Houston & Texas Central	847	479,639	235,509	755,186	132,654	128,812	7,106	306,796	21,624	596,053	78.92	159,134	34,722	124,215	—81,665
Houston East & West Texas	190	132,224	53,504	193,881	33,302	18,062	1,238	83,347	4,889	140,836	72.64	53,044	6,751	46,166	12,924
Illinois Central	4,787	6,335,366	2,079,253	9,026,106	1,529,874	2,334,369	75,042	3,609,902	208,419	7,787,265	86.27	1,238,841	436,669	799,731	—2,169,874
Indiana Harbor Belt	116	.....	.....	583,672	103,402	100,711	1,754	350,366	16,148	572,380	98.06	11,292	9,954	1,338	—36,174
International & Great Northern	1,159	801,943	306,015	1,172,191	255,745	291,744	12,113	534,567	42,161	1,144,514	97.63	27,676	29,999	—2,410	—112,850
Kanawha & Michigan	176	324,316	58,285	392,592	59,136	145,035	3,474	135,466	13,843	356,960	90.92	35,632	19,657	15,974	—264,562
Kansas City, Mexico & Orient	272	110,791	21,396	137,298	38,452	36,378	1,729	63,963	6,530	147,052	107.10	—9,754	6,250	—160,004	—2,971
Kansas City, Mexico & Orient of Texas	465	77,216	17,025	98,733	36,865	36,971	1,378	58,523	9,026	142,761	144.59	—44,029	5,000	—49,029	30,849
Kansas City Southern	774	963,162	225,763	1,286,014	181,909	258,808	3,255	529,055	24,393	1,003,004	77.99	283,009	61,250	221,540	46,449
Kansas City Terminal	27	.....	.....	123,113	16,654	11,445	.....	24,712	873	54,715	44.44	68,398	20,150	48,248	47,829
Lake Erie & Western	902	684,815	70,216	792,568	159,650	205,196	12,846	342,683	23,483	743,809	93.84	48,759	46,100	1,070	—127,115
Lehigh & Hudson River	96	224,250	3,913	234,908	28,973	43,714	1,815	80,673	6,226	161,402	68.71	73,506	5,400	68,106	—9,279
Lehigh & New England	234	298,878	1,360	312,130	39,794	97,403	1,886	119,186	11,756	268,674	85.91	44,056	7,381	36,676	—198,166
Lehigh Valley	1,435	4,587,025	705,079	5,731,596	891,744	1,307,814	46,719	2,376,412	118,605	4,761,402	83.07	970,194	182,750	786,494	—928,987
Long Island R. R	398	530,963	2,005,347	2,744,891	264,895	486,953	18,744	1,022,566	47,496	1,850,948	67.43	890,942	94,428	796,357	—388,632
Los Angeles & Salt Lake	1,168	899,795	330,444	1,313,207	234,374	275,053	16,510	462,133	31,677	1,061,803	80.85	251,404	71,598	179,372	—241,191
Louisiana & Arkansas	302	133,967	39,602	178,760	77,981	36,050	3,139	68,992	6,127	192,289	107.56	—13,529	11,317	—24,838	—19,322
Louisiana Ry. & Nav. Co	349	245,495	35,064	297,406	84,389	62,572	2,924	103,951	8,164	261,999	88.09	35,407	14,000	21,391	—56,373
Louisiana Western	207	238,976	116,378	368,961	58,836	58,495	4,514	95,207	10,396	229,583	62.22	139,378	8,778	130,561	—71,591
Louisville & Nashville	5,013	6,411,033	2,066,261	8,894,919	1,329,671	1,995,018	131,431	3,582,181	189,049	7,271,973	81.75	1,622,946	260,771	1,361,214	—1,425,923
Louisville, Henderson & St. Louis	199	148,519	74,852	234,334	44,756	30,836	5,577	91,253	7,239	179,661	76.66	54,673	4,000	50,640	—29,673
Maine Central	1,216	896,637	495,835	1,522,557	313,764	335,166	19,016	806,636	34,072	1,517,717	99.68	4,839	25,623	—70,803	—374,042
Maryland, Delaware & Virginia	82	90,070	63,765	156,635	7,791	109,125	1,270	89,020	2,147	209,354	133.65	—52,719	1,734	—54 472	79,157
Michigan Central	1,861	2,180,295	1,919,675	6,654,232	820,921	1,168,010	67,606	2,305,941	112,349	4,556,797	68.47	2,097,436	285,000	1,811,530	—496 867
Midland Valley	388	223,747	83,617	314,298	73,259	53,121	3,512	122,804	11,684	264,380	84.11	49,918	6,786	43 035	—37,580
Mineral Range R. R	100	38,546	322	43,101	19,325	17,550	362	27,234	976	65,543	152.06	—22,442	3,500	—25,942	—29,618
Minneapolis & St. Louis R. R	1,646	833,312	245,965	1,128,932	163,740	250,792	11,164	509,103	28,624	963,767	85.36	165,164	49 017	114,998	67,715
Minneapolis, St. Paul & Sault Ste. Marie	4,243	2,797,342	839,910	3,875,751	591,480	632,046	24,168	1,456,342	98,301	2,830,195	73.02	1,045,555	181,516	863,705	44,818
Mississippi Central	164	54,700	37,299	103,604	22,923	32,758	1,532	37,264	5,793	100,269	96.78	3,335	3,325	—183	—62,613
Missouri & North Arkansas	365	82,073	44,806	134,808	58,771	35,585	1,655	68,799	8,152	172,866	128.23	—38,058	6,242	—44,535	—59,918
Missouri, Kansas & Texas R. R	1,713	2,137,453	688,773	2,967,076	498,721	779,773	30,535	942,369	77,210	2,343,017	78.96	624,058	90,326	533,494	—155,140
Missouri, Kansas & Texas of Texas	1,796	1,253,836	648,581	2,025,905	507,609	403,476	24,173	1,010,640	77,320	2,041,559	100.77	—15,654	47,828	—64,122	—332,610
Missouri, Oklahoma & Gulf	332	104,677	19,607	130,752	65,578	47,515	1,613	75,656	7,783	198,383	151.72	—67,632	8,500	—76,134	—54,630
Missouri Pacific	7,301	5,383,926	1,867,094	7,741,549	1,543,273	1,548,434	83,996	3,117,239	207,402	6,536,581	84.44	1,204,968	263,015	938,294	—696,654
Montour R. R	54	126,808	1,085	136,762	33,222	67,744	1,915	27,847	6,704	137,676	100.66	—913	2,551	—3,466	—43,285
Mobile & Ohio	997	984,010	185,404	1,240,775	178,085	288,311	24,469	598,022	40,707	1,129,471	91.02	111,304	45,000	66,197	—95,917
Monongahela Ry.	108	306,092	20,621	320,725	50,986	23,279	663	93,256	6,929	175,112	54.59	145,613	5,000	140,613	1,041
Monongahela Connecting	6	.....	.....	135,039	24,246	50,975	545	59,914	6,269	141,949	105.12	—6,910	1,521	—8,431	—52,444
Morgan's Lou. & Tex. R. R. & S. S. Co.	400	474,484	176,143	676,708	139,429	122,085	8,963	232,736	19,327	524,796	77.55	151,912	29,796	122,071	—155,465
Nashville, Chattanooga & St. Louis	1,247	1,107,603	492,722	1,677,521	262,059	375,404	33,155	733,231	42,791	1,453,799	86.66	223,722	50,000	173,660	—585,891
Nevada Northern	168	117,452	8,817	131,950	25,659	19,396	723	33,348	4,195	83,440	63.23	48,511	23,100	25,411	—60,280
New Orleans & N. E	398	338,319	180,944	590,289	89,275	103,789	6,595	237,337	14,496	455,401	77.14	134,888	28,357	—106,532	—26,601
New Orleans Great Northern	284	183,314	50,282	240,334	36,911	37,204	2,029	92,165	8,877	177,575	73.88	62,760	8,532	54,197	—22,559
New Orleans, Texas & Mexico	191	122,790	42,454	171,489	45,316	36,299	3,101	56,572	7,189	151,079	88.09	20,410	10,000	10,396	4,098
New York Central	6,075	16,082,435	9,072 347	28,185.031	3,482,034	5,174,907	277,725	10,146.611	627.638	20,095,936	71.30	8,089,096	1,032.515	7,054.523	—149,922
New York, Chicago & St. Louis	574	1,567,258	199,437	1,804,503	196,525	340.689	25.860	786,786	52,653	1,407.334	77.99	397,169	55.000	341,972	—203,131
New York, New Haven & Hartford	1,965	4,490,241	4,208,372	9,612,541	1,217,684	1,614.073	75 235	4,321,453	256,531	7,627,785	79.35	1,984,755	268.000	1,716.454	—1,076,704
New York, Ontario & Western	569	616,178	593.654	1,369,302	204,634	188,616	7,962	436,697	20,111	858.020	62.66	511,282	27,000	484,282	—6,491
New York, Philadelphia & Norfolk	121	657.032	122.832	824.958	61,202	207,051	9,776	344,541	11.107	655,760	79.49	169.199	16.520	152,679	—84,457
New York, Susquehanna & Western	135	238,843	64,098	336.527	30,875	59.755	1,883	206,390	7,750	306,635	91.11	29 892	37.111	—7,324	—24,163
Newburgh & South Shore	7	.....	.....	107.874	26 064	40,843	.....	62,485	3.836	133,227	123.50	—25.353	6,692	—32,044	—59,945
Norfolk & Western	2,088	5,093,904	1,083,465	6,385,269	844,985	1.859,157	36,955	2,318,979	107,060	5,175,365	81.05	1,209,904	260,000	949 808	—1,465,191
Norfolk Southern	906	317,575	178,048	518,523	138,125	102,455	8,599	286,992	21,699	558,325	107.67	—39,803	16,000	—55,838	—58,113
Northern Pacific	6,610	6,004,759	2,035.856	8,679.736	1,480,375	1,283.839	61,728	3,127,247	176.366	6,155.716	70.92	2,524,019	715,284	1,808.229	—505,130
Northern Alabama	112	58,071	14,580	74,365	32,600	6,502	1,605	47,940	1,544	90,180	121.26	—15,815	3,700	—19.515	—58,388

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Northwestern Pacific	507	$322,292	$309,460	$694,787	$98,956	$72,488	$5,986	$246,283	$12,388	$438,251	63.07	$256,536	$25,424	$231,067	—$61,986
Oregon Short Line	2,347	2,302,513	660,298	3,152,984	400,753	416,395	18,964	905,433	93,225	1,899,796	60.25	1,253,188	172,005	1,080,754	21,970
Oregon-Washington R. R. & Nav.	2,070	1,675,664	605,636	2,431,632	369,438	359,924	26,150	871,114	89,220	1,733,175	71.27	698,457	113,614	584,667	—39,881
Panhandle & Santa Fe	772	416,037	117,467	553,820	60,585	147,959	4,746	204,115	14,650	431,858	77.97	121,962	20,895	100,969	—6,840
Pennsylvania R. R. West	1,754	7,516,226	2,022,607	10,344,104	1,473,397	2,214,345	84,087	3,799,565	193,466	7,837,678	75.76	2,506,426	329,421	2,176,915	—815,844
Penn. RR, East	5,361	21,584,063	9,640,182	33,753,654	5,213,669	9,127,827	315,308	13,748,173	732,760	29,732,119	88.08	4,021,535	952,916	3,066,765	—7,077,434
Perkiomen	41	88,888	9,883	101,416	3,674	2,673	13	34,521	276	41,175	40.60	60,241	1,800	58,441	—10,050
Peoria & Pekin Union	19	17,773	2,290	94,954	25,544	30,907	941	70,031	4,906	132,328	139.36	—37,375	9,500	—46,875	—40,468
Pere Marquette	2,232	2,138,668	689,049	3,061,499	195,408	459,372	31,922	1,162,564	69,166	1,929,763	63.03	1,131,737	62,826	1,068,699	321,178
Philadelphia & Reading	1,127	5,432,365	879,363	6,602,516	574,117	1,368,806	42,702	2,750,384	125,007	4,877,059	73.86	1,725,457	143,228	1,582,229	—1,980,293
Pittsburgh & Lake Erie	224	2,053,572	247,833	2,465,195	187,106	576,263	16,620	793,188	44,681	1,619,321	65.68	845,874	75,500	770,374	—601,796
Pittsburgh & West Virginia	63	85,136	9,870	105,381	46,686	38,312	1,316	60,393	5,547	156,658	148.65	—51,277	11,472	—62,749	—76,362
Philadelphia, Bethlehem & N. E.	71	.....	.....	59,865	9,172	10,992	370	38,898	827	60,259	100.66	—394	1,050	—1,444	—22,955
Pittsburgh & Shawmut	103	88,820	4,205	94,111	41,575	37,445	1,376	33,081	2,900	116,379	123.66	—22,268	970	—23,238	—43,837
Pittsburgh, Cincinnati, Chic. & St. Louis	2,383	5,531,123	2,100,796	8,356,210	918,432	2,352,717	84,135	3,405,504	180,786	7,020,878	84.01	1,335,332	240,658	1,094,380	—1,341,073
Pittsburgh, Shawmut & Northern	204	103,338	4,794	112,569	25,684	43,929	1,000	40,666	5,232	116,520	103.51	—5,951	1,852	—5,802	74,266
Port Reading	21	132,568	.....	197,537	16,106	—3,109	18	122,819	121	135,955	68.82	61 582	9,000	52.583	—44,312
Richmond, Fredricksburg & Potomac	81	310,756	355,159	711,510	43,771	85,843	5,031	216,513	15,715	367,153	51.60	344,356	12,294	332,061	91,866
Quincy, Omaha & Kansas City	255	55,614	25,658	87,974	46,760	15,578	86	46,428	1,679	109,679	124.67	—21,705	3,053	—24,757	—20,562
Rutland	415	209,366	131,085	420,697	55,529	84,570	6,840	187,823	11,637	347,797	82.67	72 699	19,628	53,072	3,636
St. Joseph & Grand Island	258	191,212	42,218	246,377	44,189	49,673	1,630	107,213	11,566	214,272	86.96	32,104	11,856	20,248	—11,584
St. Louis, Brownsville & Mexico	548	350,706	155,285	527,816	95,857	69,654	9,264	127,096	18,097	319,968	60.62	207,848	10,000	197,853	103,342
St. Louis Merchants Bridge Terminal	9	.....	391	257,752	54,396	22,160	716	156,097	5,704	239,074	92.75	18 678	8,000	10,670	—41,513
St. Louis-San Francisco	4,761	4,459,400	2,010,956	6,751,176	1,049,949	1,162,504	77,444	2,394,349	183.471	4,864,832	72.05	1,886,343	205,242	1,679,057	—436,491
St. Louis, San Francisco & Texas	134	140.204	24,521	172,785	15,654	21,917	2,408	68,271	6,726	114,976	66.54	57,809	1,629	56,066	40,759
St. Louis Southwestern	939	784,715	198,096	1,030,172	131,715	257,058	17,546	347,962	37,058	795,789	77.24	234,385	59,882	174,238	—195,454
St. Louis Southwestern of Texas	814	405,577	156,142	590,633	139,681	187,254	10,020	321,933	22,427	680,021	115.24	—89,389	21,000	—110,449	—189,724
San Antonia & Aransas Pass Ry.	732	265,623	115,534	400,491	87,751	86,204	6,436	165,133	12,687	357,992	89.38	42,499	15.000	27,456	30,385
Seaboard Air Line	2,563	1,915,941	1,419,369	3,606.673	500.543	621.332	61,787	1,548,445	118,322	2,876,696	79.76	729,977	135,000	594,745	—144,765
St. Louis Transfer	6	.....	.....	100,909	8,676	5,632	172	38,018	2,376	54,873	54.37	46,035	100	45,935	11,639
South Buffalo	11	39,860	.....	82,140	3,925	15,708	291	50,257	3,178	73,361	89.31	8.780	3,167	5,613	—25,692
Southern	6,982	6,832,005	3,774,088	11,320,441	2,158,305	1,742,528	130,337	4,426,467	275,708	8,804,766	77.77	2,515,676	323,160	2,188,528	—2,168,632
Southern Ry. in Mississippi	278	81,803	44,263	133,186	31,020	13,827	2,066	75,706	3,981	126,593	95.04	6,593	9.000	—2,407	9,462
Southern Pacific	7,049	9,925,300	3,817,804	14,734,601	1,900.535	2,801.639	95,705	5,486,113	247.204	10,819,442	73.42	3,915,159	666,431	3,249,879	—1,156,041
Spokane International	156	90,154	18,979	112,884	22,441	8,197	1,876	32,325	4,645	69,385	61.46	43,499	4,012	39,487	1,792
Southern Pacific Steamship Lines	....	561,474	37,913	650,610	13,580	582,321	15,595	539,326	23,134	1,173,957	180.44	—523,346	13,466	—536,813	—567,420
Spokane, Portland & Seattle	554	394,049	243,180	683,816	70,236	63,328	4,999	204,163	20,331	366,221	53.55	317,595	59,200	258,333	—8,980
Staten Island Rapid Transit	13	89,900	103,960	218,134	25,677	21,397	939	107,065	9,433	164,510	7,541	53,624	17,000	36,624	27,452
Tennessee Central	202	136,026	54,108	199,707	80,494	41 380	2,343	93,989	6,611	225.036	112.96	—25,330	5,135	—30,466	—108,941
Terminal R. R. Assn. of St. Louis	16	.....	3,581	332,804	55,758	33,942	718	123,965	4,670	223,057	67.02	109,746	28,250	81,487	37,540
Texarkana & Ft. Smith	87	92,845	18,645	121,262	23,039	25,842	692	81,370	3,011	133,556	110.13	—12,294	6,458	—18,765	—51.047
Texas & New Orleans	469	473,522	179,496	722,183	119,422	143,478	4,483	221,339	15,913	543,347	75.23	178,836	21.356	157,258	—72,946
Texas & Pacific	1,916	1,940,451	905,603	2,984,573	335,577	609,962	27,984	1,162,612	76,406	2,236.644	74.94	747,929	100,000	647.504	56,582
Toledo & Ohio Central	435	781,727	67,461	928,985	137,979	332,751	7,769	347,381	16,319	845,223	90.98	83,763	33 862	49,889	—350,613
Toledo, Peoria & Western	217	69.977	48.739	126.455	17,141	40,257	1,819	74,411	5.030	138.658	109.64	—12.204	8,500	—20,704	—29,389
Toledo, St. Louis & Western	454	551,808	72,051	663,367	139,785	132,277	5,807	292,277	10,443	580,589	87.52	82,778	26,000	56,778	—173,354
Trinity & Brazos Valley	368	70.475	23,939	98,592	42,116	46,256	1,899	57,344	8,071	155,886	158.11	—57,093	5,714	—62,809	—24,810
Ulster & Delaware	128	63,599	41,174	122,227	25,731	20,155	2,080	73,483	5,396	127,285	104.13	—5,058	4.800	—9,858	—39,411
Union R. R. of Pennsylvania	40	.....	.....	696.018	64,618	176,772	240	380,133	6,687	628,451	90.29	67,567	7,714	59,853	—245,082
Union Pacific	3,614	6,241,159	2,080,652	9,064.459	1,203,647	1 643.535	53.524	2,558,125	257,110	5,933,787	65.46	3,130,672	286 736	2,843,211	—1,222,438
Utah	98	96,784	752	98,664	15,085	18,614	191	21,157	2,092	57,140	57.91	41,524	3,072	38,452	—30,364
Vicksburg, Shreveport & Pacific	171	187,484	83,258	285.743	38,127	59,426	3,728	94,354	9,465	207,901	72.82	77.843	15,242	62,573	20,692
Virginian Ry.	523	877,403	69,714	1,031,118	179,635	180,554	4,652	338,781	18,303	724,679	70.28	306,439	35,700	270,739	—104,623
Wabash	2,503	2,986,342	947,111	4,214,716	703,150	749,959	63,090	1,981,514	118,705	3,640.540	86.37	574,175	107.786	466,059	—1,044,874
Washington Southern	35	144,501	222,862	406,879	29,908	38,224	2,269	115,990	5,647	192,037	47.19	214,842	6,379	208,463	96,689
West Jersey & Seashore	361	325,500	978,586	1,372,040	222,317	214,143	9,983	530,808	21,046	1,004,006	73.18	368.034	50,403	317.622	—90,778
Wichita Falls & N. W.	328	140 496	55,152	202,544	58,096	27,636	1,834	109,244	7,600	204,399	100.91	—1,855	9,908	11,926	34,290
Western Maryland	688	985,233	109,301	1,205,223	193,444	383,887	15,917	431,712	44.769	1,080,952	89.69	124.272	43,200	81 072	—83,598
Western Pacific	1,011	864.236	187,614	1,096,800	234,408	174,613	12,915	324,960	21,865	790,466	72.07	306,335	45,908	260,299	—124,714
Western Ry. of Alabama	133	101,892	79,460	194,671	25,315	38,047	3,109	72,442	6,823	149.419	76.75	45,252	7.500	37,752	5,928
Wheeling & Lake Erie	511	1,181,429	62,085	1,403,599	217,242	264,818	6,029	472,388	26,137	989,939	70.52	413,660	55.500	358,151	—188,037
Yazoo & Mississippi	1,381	1,471,083	421,405	1,968.809	302.337	422.102	14,508	665.412	44,842	1,419,412	72.09	549.397	75,683	473,296	—194,748
Minnesota & International	194	58,542	29,126	93,563	22,146	15,577	467	47,026	3,502	88,720	94.82	4,843	4,640	203	—9,140
Northwestern Pacific	507	1,731,042	1,356,455	3,436.286	701.967	483,176	35,446	1,536,045	87,294	2.854.936	83.08	581,350	157,734	423,189	—397,066
Oregon Short Line	2,347	15.001,285	3,874,894	20,208,927	4,114,129	3,467,298	111.866	6,184,099	612,305	14,895,128	73.71	5,313,799	1,137,574	4,174,787	—1,121,626
Oregon-Washington R. R. & Nav.	2,069	10,248,484	3,721.855	15,196,784	3.003.202	2,381,759	189,505	6,185 312	654.945	12.601.186	82.91	2.595.599	797,131	1,796,701	—702,865
Panhandle & Santa Fe	772	2,298,125	608.298	3,055,108	724,868	1,100,107	1,526,990	1,558,773	103,798	3,502,369	114.63	—447,261	117,059	—565,055	—1,097,181
Pennsylvania R. R. West	1,754	41,276,619	11,865,159	57,964,459	8,166.591	15.542,004	511,715	25,410,481	1,300.198	51,332,497	88.55	6,631,962	2,140,524	4,489,896	3,308,639
Pennsylvania R. R. East	5,361	132,748,544	58,046,399	208,379,929	30,998,646	58,651,647	1,809,843	93,167,293	5,110,371	193,549,100	92.88	14,830,829	6,300,065	8,522,670	632,551
Perkiomen	41	536,672	53,078	612,609	36,274	30,719	132	251,912	2,177	321,361	52.45	291,247	12,600	278,647	72,799

Traffic News

The Chamber of Commerce of Houston, Tex., on behalf of the Houston Car Wheel & Machinery Company, has petitioned the Dallas (Tex.) District Freight Traffic Committee for a revision of rates on old and new car wheels and axles to points in Arkansas and Oklahoma. Changes are requested in the rates on scrap iron and steel, old wheels on or off axles and new wheels and axles. The proposed rates would allow Houston car wheel manufacturers to compete with those in St. Louis and Kansas City.

The Canadian Railway War Board has recently issued an order allowing regularly organized railway and steamship ticket agencies to continue the sale of railway tickets under such arrangements as the individual railway companies believe best suited to protect their interests. This action is taken, according to the board, because of the character of service rendered by these organizations to the public and to the railways in the handling of railway transportation.

The grain elevators at Fort William and Port Arthur, Ont., number 36, and in the near future, following the completion of certain additions, the total capacity of these elevators will be 55,560,000 bushels of grain. This is the largest elevator storage capacity of any port in the world, exceeding Chicago and Minneapolis. A large proportion of these elevators are fireproof. The Port Arthur elevator has a capacity of 9,500,000 bushels. The elevators in this port can unload 2,360 cars in ten hours, and the 23 elevators on the water front can in that time load into steamers 9,350,000 bushels. On one day, November 30, 1915, they actually did load 7,350,000 bushels. —*Canadian Pacific Bulletin.*

Traffic conditions for the week ended September 8 show some improvement in the movement of freight throughout several of the regions, compared with the same period in 1918. In the Southern region, according to the figures issued at Washington, revenue freight loaded showed an increase of 3,807 cars over the corresponding week of last year, and 10,973 cars over the week ended September 1, 1919. In the Central Western region lumber loaded showed an increase of 16 per cent and grain 8 per cent over the same week in 1918. In the Southwestern region 37,881 cars of wheat were loaded during the period July 1 to September 3, being an increase of 8,850 cars over the same period last year.

The Pacific Coast Shipbuilders' Traffic Association, with headquarters at San Francisco, Cal., has been organized recently to obtain reductions, if possible, on the present freight rates on ship steel. The association is composed of 18 Pacific Coast shipbuilding companies, and its officers are as follows: L. R. Bishop, chairman, representing the Southwestern Shipbuilding Company, the Long Beach Shipbuilding Company and the Schaw-Batcher Shipbuilding Company; H. C. Reed, secretary, representing the Bethlehem Shipbuilding Corporation, Ltd.; C. E. Robinson, treasurer, representing the Pacific Coast Shipbuilding Company. Soon after the organization of the association it began an active campaign to have the existing transcontinental freight rates on steel reduced in order that Pacific Coast shipbuilders would be enabled to continue the fabrication of steel ships. Letters outlining the present situation on the Pacific Coast and its relation to transcontinental steel rates have been sent to Max Thelen, director of public service, and Edward Chambers, director of traffic, of the Railroad Administration.

The necessity for loading cars to full capacity and releasing them promptly in order to avoid a car shortage has been called to the attention of shippers, consumers and officers of the Railroad Administration in a letter recently made public by the Public Service Commission of Oregon. The letter says in part: "Grain is now moving and very shortly the maximum shipments may reasonably be expected, followed by the transportation of apples, potatoes and perishables, with demand for refrigerating equipment. Our lumber shipments must be adequately cared for, and this Commission, mindful of the past, requests that the Administration give such attention to Oregon's needs as will prevent any recurrence of adverse conditions heretofore encountered by our shippers. We suggest again directing the attention of shippers both by circular and placard, to the necessity of loading to full capacity, and promptly releasing cars, with such other advice as will tend to assist in conserving the supply, and speeding up the movement. We further suggest the advisability of carriers moving traffic to destination by the most direct route available."

According to a report on overseas traffic for the week ended Sept. 10, 5,842 cars of commercial export freight were received at North Atlantic ports for this period, compared with 869 cars for the same week in 1918, an increase of 4,973 cars, or 572 per cent, for the first ten days of September, 1919, over the corresponding period for 1918. The report shows that there were 14,186,237 bushels of grain stored in elevators at North Atlantic ports for the period mentioned. There were received during the week 6,549,358 bushels of grain, while 6,587,037 bushels were cleared. The total amount of grain in elevators as of Sept. 10 represents 72 per cent of the total elevator capacity at these ports. At South Atlantic and Gulf ports there were 10,366,191 bushels of grain in elevators, the elevators at Port Arthur being the only ones reported empty. At North Atlantic ports there were 20,321 cars of export freight on hand on September 10, 1919, compared with 20,593 cars for the same day of the preceding week. The report shows that there were 8,621 cars of export freight on hand at South Atlantic and Gulf ports as of September 9, 1919, as against 8,958 cars on September 3, a decrease of 337 cars.

Freight Situation on the New Haven

E. J. Pearson, federal manager of the New York, New Haven & Hartford, has issued an appeal to shippers and consignees to release cars more rapidly in order to avoid an embargo. Loaded cars are accumulating and the co-operation of the shippers, which brought relief in July and August, is still urgently necessary. He says further:

"Since the recent strike the number of cars placed at destination for unloading has rapidly increased from an average of about 8,000 a day to between 11,300 and 12,000, and, in addition, there are a considerable number of cars at destination awaiting space on unloading tracks. Unloading is progressing at the average rate of 2.4 days per car placed. Previous record has been at the rate of less than two days per car placed, which, on account of the necessities of the present situation, should be improved upon if possible.

"At the present time there are about 50,000 cars on the system, whereas the record volume of traffic formerly was handled with 5,000 to 7,000 less. The present increase is congesting transportation facilities, restricting the inbound movement, the current performance of terminal switching, prompt removal of empties, the receipt and forwarding of trains, and is decreasing capacity for maximum performance. The demand for empty cars is extremely urgent."

"The work of construction needed for the completion of extensive terminal improvements, including also a transfer station at Cedar Hill (New Haven), has been recently resumed through the assistance of the United States Railroad Administration, so that within a few months capacity will be still further increased.

Coal Production

Bituminous coal production in the United States for the week ended September 6 is estimated by the Geological Survey at 9,660,000 net tons, a decrease of 7.6 per cent as compared with the week before, apparently due to the observance of Labor Day as a holiday in some districts. However, the rate of production, the report says, appears to have risen, and at least maintained that set up in late August. For the week ending August 30, the percentage of full time output lost on account of car shortage was 24.1, as compared with 16.8 per cent the week before. In part, however, the report says, the change was more apparent than real because, without any change in the number of cars, an adequate car sup-

ply one week when the demand is dull and men are on strike may become an inadequate supply the next week when demand is brisk and men are back at work. Such an apparent change seems to have occurred in Illinois; but taking the country as a whole the less adequate car supply was real and the number of empties available for loading was smaller than the week before. Car supply, instead of improving, during the week of August 30 became somewhat less satisfactory and just now the principal obstacle in the way of increased production is shortage of cars.

National Industrial Traffic League Meeting

The National Industrial Traffic League's summer session was held at Pittsburgh, Pa., on September 4 and 5. The reports of the various committees of the league were presented, however, much of the time was taken up with the discussion of action taken by the executive committee regarding legislative recommendations for the solution of the railroad problem and discussion of the car shortage situation. Among the legislative recommendations made by President G. M. Freer of the league, in reporting for the executive committee, are suggestions that Congress be asked to provide a time limit within which carriers must present bills for charges on shipments, opposing the extension of the jurisdiction of the Interstate Commerce Commission over port-to-port water rates, and endorsing the suggestion made to the House Committee for a provision in the law that interstate rates will not automatically revert to their pre-war status when the roads are restored to private ownership, but will continue until June 30, 1921, unless changed by action of the properly constituted authorities. With the exception of the latter recommendation the league approved of the executive committee's recommendations. The latter recommendation created considerable debate as to its probable effect and the question was postponed for further discussion.

A report of an investigation conducted by the league as to the car shortage situation was also presented. The answers to a circular sent by the league to its members asking for information as to the reasons for the car shortage stated briefly that poor switching, slow movements in transit, failure to repair bad order cars, accumulation of administration cars because they were not allotted, freight schedules lengthened, bad condition of motive power and labor disturbances, both industrial and railroad were contributing factors. Max Thelen, director of the Division of Public Service, who was present at the meeting, replied to each of the assigned reasons for the car shortage, outlining the administration's side of the problem. The action taken by the league on this matter was expressed in a telegram prepared by a sub-committee and forwarded to Director General Hines assuring the continued cooperation of the shippers but demanding further efforts by the Railroad Administration to avoid a car shortage.

Among the resolutions adopted by the league at the meeting are the following:

A resolution offered by the executive committee providing that the directors of public service and traffic be requested to require that application for the cancellation of rates alleged to be obsolete should be accompanied in all cases by a showing that interested parties have been consulted as to the actual or prospective use of such rates and whether or not these parties consented to the withdrawal of the rate, also that all tariffs carrying such cancellations shall contain in connection therewith a provision to the effect that such rates shall be re-instated on one day's notice on proper showing that the rates will be actually used.

A resolution, also offered by the executive committee, recommending that legislation be enacted that will continue the rates, fares, etc., existing, with intra and interstate, at the time the carriers are returned to private operation until same be later changed either by the act of the carrier or carriers as provided by law or by properly constituted authority having jurisdiction.

A resolution recommending that the law provide for a board of conciliation and arbitration to hear labor railroad disputes whose decision should be subject to revision only by the authority to whom it would report. Railroad employees would waive their right to strike and would be guilty of conspiracy, punishable by proper remedy, if they did strike though they might resign. The Board would be composed of eight members—two from carrier employees, two from carrier officers and four from the general public—and would be appointed by the Interstate Commerce Commission and report to it.

President Freer was instructed by the league to oppose the rigid long-and-short-haul clause section of the Cummins Bill, the provision for a transportation board, the provision for rate zones and in his discretion such other portions of the bill as are opposed to the provisions of the Esch-Pomerene bill, in his appearance before the House Committee. The league also voted that the Senate Committee be asked to have hearings on the Cummins bill.

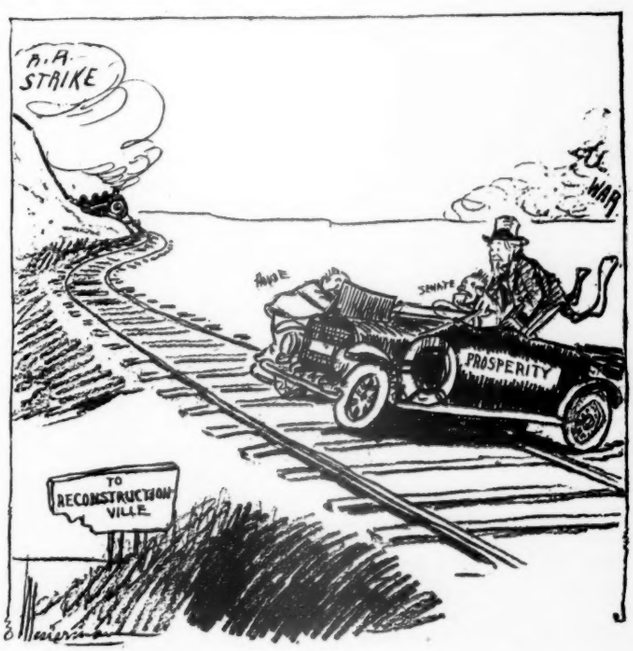
Anthracite Shipments for August

The production of anthracite continues to increase, according to the statement of the Anthracite Bureau of Information, Philadelphia. The shipments for August amounted to 6,144,144 gross tons, as compared with 6,052,334 tons in July, which in turn had the record for largest shipments since October, 1918. Compared with August, 1916, the latest normal year in the anthracite trade, the shipments last month showed an increase of a little over 600,000 tons or about 11 per cent.

For the first five months of this coal year the shipments have amounted to 28,752,699 tons, as compared with 26,678,333 tons for the corresponding period of 1916, an increase of 2,074,366 tons.

The shipments by railroads were as follows (gross tons):

	August, 1919	August, 1916	Five Mo., 1919-1920	Five Mo., 1916-1917
P. & R.	1,142,713	1,000,667	5,559,110	4,904,976
L. V.	1,171,026	1,026,074	5,220,226	4,865,344
C. of N. J.	560,331	541,156	2,593,506	2,633,831
D., L. & W.	936,212	875,131	4,619,134	4,063,406
D. & H.	716,333	572,822	3,380,415	3,007,146
Penna.	438,214	482,416	2,029,557	2,265,283
Erie	678,437	658,044	3,161,576	3,182,216
N. Y. O. & W.	182,450	184,708	838,560	814,272
L. & N. E.	318,428	190,779	1,350,615	941,859
	6,144,144	5,531,797	28,752,699	26,678,333



From the Columbus (O.) State Journal

Stalled

Commission and Court News

Interstate Commerce Commission

Discrimination Against Western Pacific Ordered Removed

The Interstate Commerce Commission in a decision by Commissioner McChord, finds unlawful and in violation of the second paragraph of Section 3 of the commerce act a lower basis of divisions of joint through passenger fares between points in California and Salt Lake City and points north and east thereof accorded to the Western Pacific by the Southern Pacific and the Atchison, Topeka & Santa Fe than they allow each other of similar joint fares. The decision also holds that the Western Pacific is entitled to reparation, although the amount has not yet been determined. Commissioner McChord says the expression of rates and charges in the form of divisions makes them none the less rates and charges which may be discriminatory. The effort to relieve a discrimination does not necessarily involve the power to describe, the order of removal normally operating in the alternative, and that as the commission has found that the division fixed upon was discriminatory that statement of the fact establishes the damage. The amount of the damage is demonstrable and does not depend upon any contingency. The plaintiff, because of the unlawful practices of the defendants was placed in an unfavorable and unjust situation with respect to passengers transported by it between points in California and Salt Lake City as compared with its competitors. If it had been placed in the same situation as its competitors it would have received more money for each passenger transported, but as the exact amount of damage cannot be determined upon the record, the plaintiff should prepare a statement showing the details of the transportation of passengers, upon which the commission will consider the entry of an award of reparation.

Commissioner Clark dissented to the award of reparation, but concurred in the remainder of the report. Commissioner Eastman filed a concurring opinion and Commissioners Daniels and Hall filed dissenting opinions. Commissioner Daniels said he was unable to agree that reparation should be awarded and that he was inclined to doubt whether the evidence disclosed a violation of Section 3. By continuing its participation in through routes and joint fares with the Western Pacific, he says, the Southern Pacific voluntarily short hauls itself, and the joint fares must therefore be regarded as a distinct concession on the part of the Southern Pacific. A different basis of divisions resulting from such an inequality of mutual conditions generally is not necessarily unlawfully discriminatory. Mr. Daniels also says that the record may be searched in vain for evidence showing that the plaintiff sustained actual damage. If the Santa Fe and the Southern Pacific had demanded of each other the same minimum divisions as they demanded of the Western Pacific the latter would not have derived any benefit therefrom. Commissioner Hall agreed substantially with Commissioner Daniels, pointing out that while the Southern Pacific and the Santa Fe competed with each other, their lines are so located as to supplement each other and in many instances each is a necessary and important connection of the other; while the Western Pacific supplements neither in any practical sense and affords to neither any traffic possibilities of consequence.

State Commissions

The New York State Public Service Commission, Second District, has ordered the installation of "audible-visible" warning signals at highway grade crossings on the New York Central and the Delaware & Hudson, as follows: At Elsmere; between Elsmere and Delmar; at Guilderland Center and at the Guilderland road two miles from South Schenectady.

The Public Service Commission of New York, Second District, acting on a complaint of the Brotherhood of Railroad Trainmen, decides that the full-crew law, of New York, prescribing the number of men to be employed on freight trains of over 25 cars, but excepting trains on roads less than 50 miles long, does not apply to the Wallkill Valley Railroad, 32 miles, a branch of the New York Central extending from Kingston, southwestward to Montgomery. Although the branch is operated under lease, as a part of the New York Central system, which is much more than 50 miles long, the commission holds that as the branch trains never run on to the main line, the Wallkill Valley is to be treated, so far as this law is concerned, as a separate railroad. Either as to its ownership, or as to its method of operation it is not "a railroad of more than 50 miles in length."

The New York State Public Service Commission, Second District, acting on a complaint of the Brotherhood of Locomotive Engineers, decides that locomotives should not be towed under steam except under the control of an engineman or of a fireman with at least one year's actual experience; and not in charge of a fireman until he shall have established his ability by satisfactory examinations and tests The complaint was against the Boston & Maine for permitting engines to be towed under steam when manned only by a fireman. On this road steam locomotives, with their trains, are hauled through the Hoosac Tunnel, about 5 miles, by electric locomotives. Evidence was presented to the effect that engines have been thus run while manned by stupid or careless firemen. As a fireman is, presumably, in training for the position of engineman, the commission holds that, after one year, he ought to be able to attend to such elemental duties of the engineman as are required when the engine is being towed. The decision requires, therefore, that such firemen shall have had one year's experience and that this fact, with his qualifications, shall be made a matter of record, which record shall be accessible to the commission.

The New York State Public Service Commission, Second District, considering a complaint against the American Railway Express Company, in Buffalo, decides that the rule of that company limiting its pickup service to the hours before 5 p. m., and providing for no pick-up service in Buffalo on Sunday, is reasonable. Certain bakers, fish dealers, makers of ice cream, and motion picture exchanges, have been accommodated in former years by evening and Sunday wagon service; but the commission holds that these branches of traffic should not be considered as such serious necessities as to warrant the Sunday (or evening) wagon service; these shippers, in these irregular hours, must do their own carting. The express company's offices are kept open for the receipt of shipments during the entire 24 hours every day, including Sundays.

Court News

Taxation of Automatic Block Signals

The Montana Supreme Court holds that the block-signal system of a railroad located on the roadbed and attached to the track, and operated automatically by passing trains, is assessable by the state board of equalization and not the county assessor. Judgment for the railroad in an action against a county treasurer was affirmed.—N. P. v Dixson (Mont.), 174 Pac. 706.

Limitation of Liability—"Character of the Shipment"

In an action by a shipper against a railroad for the full value of a shipment of oriental rugs, destroyed en route by a fire of unknown origin, it appeared that the shipper had undervalued the rugs and thus obtained a lesser freight rate. The New York Appellate Division holds that the railroad was not liable for more than the declared value of the rugs, as it had no knowledge of the "character of the shipment" within the meaning of the Carmack and Cummins amendments. The shipment was described as rugs but this gave the railroad no knowledge that it consisted of valuable oriental rugs.—Haddad v. Southern Pacific, 185 App. Div. 500.

Foreign Railway News

German Railway Rates Raised.—From October 1 all railway passenger and baggage rates in Germany will be raised 50 per cent.

I. T. Williams, general manager of the London & North Western Railway of England recently had conferred upon him the honor of knighthood.

Sunday Traffic on German Railways.—Suspension of Sunday traffic on Baden, Wurtemburg, Bavarian and other German railways for all purposes except transport of essential foodstuffs, is said to be contemplated, owing to coal shortage.

The Colonial Government of the Dutch East Indies, says the Far Eastern Division of the Bureau of Foreign and Domestic Commerce, proposes to build 10,000 miles of railway during the next 15 or 20 years. This is only possible, colonial officials say, by the investment of American capital with the assistance of American engineers.

Representing a Real Service

LONDON.

The Engineer (London) states that during the year 1918, 1,029,000 men passed through the Soldiers' & Sailors' Free Buffet provided by the London & North Western Railway Company at Euston.

Ambulance Trains Over Great Western

LONDON.

The Great Western Railway Magazine states that from the outbreak of war until the end of June this year, 5,895 loaded ambulance trains passed over the Great Western railway, 2,989 of which were loaded to stations on this company's system.

Railway and Port Concessions in Russia

According to Danish authority England is asking for a railway concession through Esthonia to Russia, in order to open up a road to the Russian market. It is also stated that negotiations are being carried on with a view to leasing the islands of Dagos and Oesel to England for the construction of a large commercial port there.

A New Electric Railway in Switzerland

A concession has been granted to the Berne Power Works for an electric narrow gage railway between Meiringen and Guttanen. This line will be used at first for the transport of goods in bulk for the erection of the projected water-power works at Oberhasli, and afterwards will doubtless attract a fair amount of tourist traffic.

Japanese Railway Reform

Reforms on the Japanese Government railways have been instituted (says the Japan Chronicle). Till recently all locomotives made very short runs to the great inconvenience of the traveling public. A new type of locomotive, which made a run between Tokyo and Hamamatsu, a distance of 167 miles, without changing, is to be used in time on all the government railways.

Railway Development in Queensland

The Queensland Acting Minister for Railways has been inspecting the Burnett district of Queensland in connection with the scheme of railways for opening lands to settlement by soldiers. It is proposed to construct four spur lines in conjunction with the proposed Many Peaks to New Cannindah line, including junctions with the line at Mundubbera and the Dawson Valley line. The area of land to be developed is 2,500,000 acres, and it is estimated that it will provide land for 15,800 settlers. The estimated cost of the railways is £1,420,000, while the provision will have to be made for roads and water supply.

Rapid Reconstruction of Belgian Railways

Reuter's Agency learns from a Belgian official source, says the Railway Gazette (London), that when the armistice was signed 1,500 kilometers of Belgian railways had been destroyed. So rapid has been the work of repair that today only 300 kilometers are out of order. On the principal railway from Ostend to Brussels marvelous work has been accomplished, and the normal service is being run on the embankment line which was constructed at the time of the Ghent Exhibition, and all work has been more or less restored to its pre-war condition. The bridges on the Lys and Scheldt are in a fair way towards completion, and meantime the service is maintained over temporary bridges.

Exports of Cars in July

Exports of freight cars in July totaled 1,986 valued at $4,146,923, as compared with 5,055 valued at $13,675,186 in June and 3,008 valued at $6,268,078 in May. No passenger cars were exported in July. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

	Passenger Cars		Freight and Other Cars	
COUNTRIES—	Number	Dollars	Number	Dollars
France	.....	.....	1,417	3,117,436
Italy	.....	.....	300	514,800
Canada	.....	.....	30	21,650
Honduras	.....	.....	4	590
Mexico	.....	.....	12	3,450
Cuba	.....	.....	18	15,257
Dominican Republic	.....	.....	1	2,150
Brazil	.....	.....	150	294,750
Chile	.....	.....	4	14,340
China	.....	.....	50	162,500
Total	.....	.....	1,986	4,146,923

Railway Construction in Mexico

Satisfactory progress is being made, writes a correspondent in the construction of the extension of the Llano Grande branch of the National Railways of Mexico. The road is being built by E. E. Shaw, an American contractor. He has about 1,800 men employed in the grading and track laying work. The first 28 miles out of Llano Grande will be finished in a few more weeks. It will penetrate a dense forest of commercial timber. The rails for the new line are being manufactured by the Monterey Iron & Steel Company. The proposed terminus is the Pacific port of Mazatlan. The surveyed route is over the heights of the Sierra Madre range, with a drop from about 10,000 feet altitude to sea level within a distance of about 30 miles. At Llano Grande large lumber mills were established several years ago. It is planned by owners of timber tracts reached by the road to install other lumber mills. From Llano Grande the branch line runs to Durango, 75 miles, where it connects with the old Mexican International Railroad that runs to Piedras Negras, opposite Eagle Pass, Tex.

British Trade with Germany

In commenting on trade with Germany the London Times Trade Supplement says:

There is an old adage about the folly of cutting off one's nose to spite one's face, and logically this saying applies to the question of future trade relations between Britain and Germany. Other countries, with the possible exception of Belgium, whose experience of Hun methods has been burned in too deeply to be quickly forgotten, are making strenuous efforts to secure a commanding position in the German market. Distasteful as the idea of doing business with Germans is to large numbers of people, we are afraid that the exigencies of the situation will compel us to bid for our share of the German market.

The decision of the Federation of British Industries to

open a branch in Cologne is a recognition of an unwelcome necessity. The facilities which will be afforded thereby will no doubt be very valuable, particularly in the direction of investigating the financial standing of German firms desiring to do business with this country. This extremely necessary work will certainly prevent a good deal of loss to British exporters.

Belgian Railroad Receipts

Belgian railroads are now said to be working with 60 per cent of pre-war efficiency, writes Trade Commissioner Harry T. Collings from Brussels, under date of August 13. That the railroads are fast returning to normal conditions is shown by the following figures giving the receipts of Belgian railroads for the first five months of 1919, as compared with the corresponding months in 1914. (All conversions have been made at the normal rate of exchange, $0.193 per franc.)

	Receipts			
	From Passengers and Baggage		From Freight and Other Merchandise	
Month—	1914	1919	1914	1919
January	$1,464,677	$885,677	$3,537,497	$929,102
February	1,304,101	1,025,023	3,626,084	1,261,834
March	1,485,907	1,469,309	3,887,599	1,993,304
April	1,752,826	1,940,229	3,673,176	2,321,404
May	1,834,272	2,161,986	3,625,891	2,773,410

These figures should not be taken to indicate equivalent numbers of passengers or quantities of freight in the two years compared, Mr. Collings says. Previous to the war, railroad fares and freight rates were exceedingly low in Belgium. In general, one may say that the railroad fare in 1914 was 3 cents a mile first class, 2 cents second class, and 1 cent third class. Fares have now been increased from 40 to 50 per cent. Previous to the war, tickets good for travel on all lines in Belgium for 15 days from date cost about $12 first class, $8 second class, and $4.75 third class. These are not issued at present. Cheap workmen's tickets permitted workmen in 1914 to go to and from work up to a distance of 3 miles for about one-half cent a mile, for longer distances the cost per mile was much lower—tickets permitting a journey of 25 miles each way costing as low as one-seventh of a cent a mile. Many of these tickets have not been issued since the war; those issued are at much higher cost per mile than before the war. Proposals have recently been made to increase still further railroad fares to enhance government receipts.

In 1914 freight rates in Belgium were exceedingly low and were uniform throughout the country, except that a special rate was granted for large quantities of merchandise destined for export (tarifs des ports de mer). The present freight rates in Belgium are 40 per cent higher than before the war and may be increased soon.

Aldington Becomes General Manager of Great Western

Charles Aldington recently was elected general manager of the Great Western Railway of England, succeeding Frank Potter, deceased. Mr. Aldington has many acquaintances among the railway officers of the United States, having traveled over and studied the railways of the United States extensively. Mr. Aldington, like most American railway executives, has risen from the ranks. He entered the service of the Great Western as a junior clerk when 14 years old. In 1894 he became chief clerk to the superintendent of the London division. Five years later he became traffic superintendent of the Central London Railway, but returned to the Great Western in 1902 and for a time was attached to the staff of the general manager. In 1909 he became assistant to the superintendent of the line and later was made assistant superintendent of the line. On January 1, 1911, he was appointed superintendent of the line and held this position until March, 1919, when he was made assistant general manager. In 1905 he was a delegate to the International Railway Congress at Washington. He familiarized himself with railway practice in France, Germany and Italy and elsewhere on the Continent, as well as in America. While superintendent of the line Mr. Aldington inaugurated a fine system of express freight trains, which for some years prior to the war were a distinct feature of the service of the Great Western Railway. He introduced the system of telephone train control and he also fostered the extension of road motor car service to and from country districts not served by a railroad.

Exports of Railway Track Material in July

Exports of track material in July were considerably less than those of any previous month this year. Rails exported amounted to 32,707 tons valued at $1,870,583, as compared with 67,028 tons valued at $4,208,872 in June. The totals for July as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

	Spikes		Steel Rails		Switches, Frogs, Splice Bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Belgium	527,871	37,117	1,163	67,279	27,586
France	149,730	5,636	1,074	66,574	20,529
Italy	.....	.....	.....	.....	909
Netherlands	.....	.....	214	17,952	6
Norway	.....	.....	33	2,000	.....
Portugal	.....	.....	811	44,960	5,640
Sweden	.....	.....	202	17,136	1,433
England	.....	.....	1,992	114,998	4,101
Scotland	.....	.....	200	12,803	602
British Honduras	.....	.....	.....	.....	71
Canada	24,675	764	356	20,352	28,044
Guatemala	200	10	.....	.....	.....
Honduras	10,600	436	341	18,459	1,568
Panama	.....	.....	.....	.....	820
Salvador	1,000	70	8	1,000	2,856
Mexico	515,498	23,734	1,992	78,299	44,762
Newfoundland and Labrador	.....	.....	.....	.....	196
Jamaica	.....	.....	145	8,540	139
Trinidad and Tobago	.....	.....	.....	.....	23
Other British West Indies	2,000	100	31	1,500	42
Cuba	507,724	20,771	3,077	144,091	30,241
French West Indies	.....	.....	120	5,040	.....
Haiti	30,000	1,053	.....	.....	.....
Dominican Republic	.....	.....	3	244	.....
Bolivia	.....	.....	.....	.....	4,480
Brazil	342,943	20,943	10	359	29,368
Chile	44,400	1,850	.....	.....	1,760
Colombia	59,892	3,379	128	7,262	2,527
Ecuador	40,000	1,600	.....	.....	.....
Peru	.....	.....	.....	.....	3,911
Venezuela	.....	.....	.....	.....	234
China	.....	.....	933	70,197	.....
Japanese China	456,330	20,899	772	66,748	2,400
British India	.....	.....	24	1,677	1,087
Straits Settlements	.....	.....	191	18,000	420
Other British East Indies	.....	.....	52	3,486	.....
Dutch East Indies	561,124	46,270	5,613	305,858	29,002
Japan	363,940	11,634	12,770	742,928	33,989
Siam	134,000	11,291	.....	.....	.....
Philippine Islands	32,000	1,497	452	32,901	10,188
British South Africa	.....	.....	.....	.....	298
Total	3,803,927	209,054	32,707	1,870,583	289,232

Effect of French Railway Nationalization

In a manifesto published on June 2, the French Federation of Railway Employees protested against the proposed rise in rates, and suggested as an alternative the nationalization of all the French railways. Commenting upon this, the Journal des Débats of June 7, points out that a rise in rates is inevitable in view of the huge deficits on working—5,500,000,000 francs in 1914-19, and 3,000,000,000 francs for 1919 alone. But would nationalization benefit the users of the railways or the Exchequer? asks the Journal. It is easy to answer the question by comparing the working co-efficient (operating ratio) of the State system, which was 120 per cent in 1918, with 87 per cent for the Midi, 85 per cent for the Paris-Orléans, and 90 per cent for the Paris-Lyons-Méditerranean. The State figure exceeds even those of the companies serving the liberated districts: 96 per cent for the Est, and 112 per cent for the Nord. A comparison has been made between the Ouest system purchased by the State and the Orléans system, which have a very similar traffic both in kind and length of haulage. The Orléans deficit for the last 10 years (1909-1918) reached 241,000,000 francs. If, instead of being worked at a working co-efficient ranging from 52-85 per cent, the co-efficient of the Ouest had been employed (68-120 per cent) the deficit would have exceeded 1,200,000,000 francs. From these figures the cost of complete nationalization to the taxpayers may be guessed. The Federation, moreover, the Journal continues, omits to mention that not the least of the causes of the actual deficits of the lines is the rise in wages of the personnel. Before the war the employees of the great railways earned about 800,000,000 francs. In 1919 they will share nearly 4,000,000,000 francs, or an increase of 400 per cent. A rise in rates is unavoidable, and the increased revenue thus gained will be accompanied by the reduction of work owing to the general adoption of the eight-hour day.

Recent Damages to Mexican National Railroads

The National Railroads, says a recent issue of Excelsior, quoted in commerce Reports, have suffered serious losses in the recent storms, and it is officially estimated that an additional expenditure of 200,000 pesos will be necessary for ties alone, without counting the value of the material which the railroads have at present on hand for the purpose. It is said that even greater expenditures will be necessary for rails and other supplies. The materials which were stored in Torreon, Durango, Monterey, and other cities of the north have been used already for the repair of the lines in the State of Chihauahua, which have been more seriously damaged than in any other section. Paulino Fontes, Director of the Railroads, states that the President of the Republic, in view of the absolute necessity of immediately repairing damages which have been done, has decided upon the immediate appropriation of money for these purposes, in addition to that which is taken in from freight and passenger transportation.

More than 50 bridges, large and small, have been destroyed by the storms in the division from Jimenez to Chihuahua. Almost as many more have been destroyed from Chihuahua to Ciudad Juarez and in the branch from Jimanez to Chihuahua. The repairing of the bridges will be very expensive and it will be necessary to make an even greater outlay in the construction of enbankments to support the roadbed, which has been completely obliterated in many places for miles.

It is stated that the large Ortiz bridge, in the State of Chihuahua, will have to be completely rebuilt. It is planned to construct a new bridge entirely of concrete, in order that it may more successfully resist the repeated overflows of the River Concha. Eng. Angel Pembert has been delegated by the President to make a thorough investigation of the probable cost of the work and of the conditions under which it may be carried out.

England's Exports and Imports

LONDON, England.

The following table, taken from the English Board of Trade statistics, gives the exports and imports of railway material of the United Kingdom for the seven months ended July, 1919, as against the same period for the two previous years:

EXPORTS

	1919	1918	1917
Locomotives	5,946 tons	12,318 tons	13,584 tons
Steel rails	65,621 tons	18,088 tons	24,403 tons
Railway wheels and axles	7,683 tons	5,829 tons	2,980 tons
Tires and axles	14,321 tons	11,205 tons	12,238 tons
Chairs and sleepers	8,938 tons	4,076 tons	4,250 tons
Railway carriages for passengers	£249,882	£418,782	£109,557
Railway trucks, wagons, etc	£646,913	£175,875	£276,552
Machine tools	£1,024,408	£858,533	£1,324,772

IMPORTS

	1919	1918	1917
Locomotives	29 tons	178 tons	112 tons
Steel rails	3,748 tons	278 tons	219 tons
Tires and axles	2 tons	368 tons	1 ton
Machine tools	£2,660,041	£2,211,516	£1,456,812

The following tables show the distribution of steel rails exported from the United Kingdom:

	1919	1918	1917
To Russia	49 tons	.....	.....
Sweden	3,901 tons	.....	.....
Portuguese East Africa	1,030 tons	5 tons	1 ton
Chile	160 tons	.....	124 tons
Argentine Republic	127 tons	.....	.....
British South Africa	1,992 tons	13 tons	100 tons
British India	25,151 tons	2 tons	104 tons
*Straits Settlements	8,091 tons	.....	38 tons
Ceylon	3 tons	.....	.....
Australia	21 tons	.....	10 tons
New Zealand	7,291 tons	21 tons	132 tons
Other countries	17,805 tons	18,047 tons	23,894 tons

The following table shows the distribution of locomotives exported from the United Kingdom:

	1919	1918	1917
To Spain and Canaries	605 tons	150 tons	74 tons
Other countries in Europe	1,608 tons	8,189 tons	9,593 tons
Argentine Republic	529 tons	193 tons	138 tons
Other countries in South America	289 tons	183 tons	79 tons

	1919	1918	1917
To British South Africa	277 tons	441 tons	1,943 tons
British India	1,672 tons	2,386 tons	857 tons
*Straits Settlements	65 tons	39 tons	253 tons
Ceylon	73 tons	35 tons	10 tons
Australia	427 tons	57 tons	178 tons
Other countries	401 tons	645 tons	459 tons

*Including Federated Malay States and Labuan.

Equipment and Supplies

Locomotive Deliveries in July

The Railroad Administration has issued the following:

For period July 1 to July 5

Works	Road	No.	Type
American	Vgn.	3	USRA Mallet
		3	
Baldwin	B&LE	5	USRA S. F.
	B&O	2	USRA Pac.
	Erie	6	USRA Pac.
	C&O	1	USRA Mount.
	P&R	1	Mallet
	P.L.W.	1	Mallet
	SP	1	S. F.
	T&P	1	S. F.
	UP	—	
		18	

For week July 6 to July 12

Works	Road	No.	Type
American	C&NW	6	USRA 6W. Sw
	Vgn.	3	USRA Mallet
		9	
Baldwin	AT&SF	4	Pacific
	AT&SF	3	S. F.
	B&O	1	USRA Pac.
	C&S	2	USRA S. F.
	Erie	1	USRA Pac.
	Ga.	2	USRA 8W. Sw
	N&W	1	Mallet
	Penn.L.	1	Mallet
	Sou.Pac	1	S. F.
		16	

For week July 13 to July 19

Works	Road	No.	Type
American	C&NW	4	USRA 6W. Sw
	CSTPM&O	8	USRA 6W. Sw
	Vgn.	3	USRA Mallet
		15	
Baldwin	AT&SF	7	Santa Fe
	CC&O	1	Mallet
	CRI&P	6	USRA Mik.
	N&W	1	Mallet
	B&O	2	USRA Pac.
	C&S	1	USRA S. F.
	SP	2	Santa Fe
	AT&SF	1	Pacific
	P.L.W.	1	Mallet
		22	

For week July 20 to July 26

Works	Road	No.	Type
American	Vgn.	2	USRA Mallet
		2	
Baldwin	P.L.W.	2	Mallet
	SP	1	Santa Fe
	C&S	2	USRA S. F.
	CRI&P	3	USRA Mik.
	P&R	1	Mallet
	B&O	1	USRA Pac.
	AT&SF	4	Santa Fe
	AT&SF	1	Pacific
	P.L.W.	3	USRA S. F.
		18	

For period July 27 to July 31

Works	Road	No.	Type
Baldwin	P&R	1	Mallet
	AT&SF	2	Santa Fe
	P.L.W.	1	Santa Fe
	P.L.W.	2	USRA S. F.
	T&P	2	USRA Mik.
	SP	1..	Santa Fe
		9	

Grand total 112

In addition to the above, the American Locomotive Company completed 53 foreign and shipped 2 miscellaneous domestic locomotives, and the Baldwin Locomotive Works completed 20 foreign and shipped 7 miscellaneous domestic locomotives.

Locomotives

THE BELGIAN GOVERNMENT.—The American Locomotive Company is figuring on 400 locomotives for the Belgian government.

THE CUBA RAILROAD COMPANY has ordered from the American Locomotive Company one 4-6-0 type locomotive, with 20 in. by 26 in. cylinders, and a total weight in working order of 152,000 lb.

THE AMERICAN TRADING COMPANY, Cuba, has ordered from the American Locomotive Company one 2-8-0 Consolidation type locomotive, with 14 in. by 20 in. cylinders and a total weight in working order of 72,000 lb.

THE IMPERIAL KARAFUTO GOVERNMENT has ordered from the American Locomotive Company one 2-6-2 tank locomotive with 14 in. by 22 in. cylinders, and a total weight in working order of 90,000 lb.

THE MOGYANA RAILWAY OF BRAZIL has ordered from the American Locomotive Company four 2-6-6-2 Mallet type locomotives with 16½ in. and 26½ in. by 24 in. cylinders, and a total weight in working order of 160,000 lb.

THE CENTRAL OF BRAZIL has ordered from the American Locomotive Company six 4-6-2 type locomotives with 21½ in. by 28 in. cylinders, and a total weight in working order of 205,000 lb.; also seven Consolidation type locomotives with 21½ in. by 26 in. cylinders, and a total weight in working order of 165,000 lb.

Freight Cars

THE UNION TANK CAR COMPANY is inquiring for prices on 1,000 tank cars.

THE UNION TANK CAR COMPANY is inquiring for prices on 1,000 tank cars.

THE BUFFALO BOLT COMPANY, Buffalo, N. Y., is inquiring for two 50-ton flat cars.

NEW YORK CENTRAL.—The Ryan Car Company is making repairs on 300 freight cars.

W. R. GRACE & Co., New York, is inquiring for 40-ton coal cars, number not stated, for export.

O. B. CINTAS, Havana, Cuba, has ordered 150 flat cars from the American Car & Foundry Company.

THE SOUTH AFRICAN GOVERNMENT RAILWAYS have ordered 300 drop-side and 200 high-side gondola cars from the Pressed Steel Car Company.

THE MAGNOLIA PETROLEUM COMPANY, Dallas, Tex., has ordered 25 40-ton, 8,000-gal. tank cars from the American Car & Foundry Company.

Iron and Steel

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 231 tons of deck plate girder spans from the American Bridge Company, Chicago, to rebuild its bridge over the Platte river, near Ashland, Neb.

Miscellaneous

THE HASKELL & BARKER CAR COMPANY, Chicago, has placed an order for 400 tons of repair material, largely plates, to be used for repairs on 300 hopper cars of the Pennsylvania Railroad.

British Locomotives for Central and South America

LONDON.

An article in "Modern Transport" states that the North British Locomotive Co., Limited, Glasgow, have received an order for 38 4-8-0 two-cylinder compound locomotives for the Central Argentina railway.

Sir W. G. Armstrong Whitworth & Co., Ltd., has now in hand ten 4-6-0 type locomotives for the Leopoldina Railway (Brazil).

The Colombian National Railway has ordered six Kitson-Meyer type locomotives from Kitson & Co., Ltd., Leeds, three of which have already been delivered. All of these locomotives are fitted with the Robinson type of superheater.

Supply Trade News

R. S. Hunter has been appointed Chicago manager of the **Warren Oil Company of Pennsylvania,** Warren, Pa.

The **American Locomotive Company** is planning to carry out improvements to double the capacity of its plant at Chester, Pa. The work will cost about $1,000,000.

E. M. Cutting, Pacific Coast manager for the **Edison Storage Battery Company** with office at San Francisco, Cal., has been appointed manager of the railroad department with office at Orange, N. J. Mr. Cutting entered railway work in 1888 in the signal department of the Southern Pacific. In 1898 he was appointed supervisor of signals for the Western division and in 1902, in addition to his duties in the signal department, he was given charge of all electric train lighting. In 1908 he became engineer of train lighting, heating and ventilation, resigning in 1912 to become Pacific Coast manager for the Edison Storage Battery Company, which position he held until his recent promotion. Mr. Cutting was instrumental in initiating the movement which culminated in the formation of the Association of Railway Electrical Engineers of which he was elected president in 1909.

E. M. Cutting

Work has begun on an extension of the rail mill at the plant of the **Algoma Steel Company,** Sault Ste. Marie, Ont. The improvement will cost several hundred thousand dollars and is part of development plans made by officers of the company which involve an expenditure of from $5,000,000 to $7,000,000.

The **Western Electric Company,** New York, has recently added a lighting department to its general sales organization. This new department is under the direction of **E. Cantelo White.** Mr. White has served in the electric lighting field for almost 15 years, both in the United States and Canada, as a salesman and designer of lighting equipment.

Charles Riddell has resumed his duties as manager of the Chicago office of the **Baldwin Locomotive Works** and the **Standard Steel Works Company.** Mr. Riddell, who was formerly manager of the Chicago office, has been serving as assistant secretary and treasurer in the financial department at the Philadelphia, Pa., office for the past year and a half. **Arthur S. Goble,** manager of the Chicago office, has been transferred to the St. Louis, Mo., office.

C. H. Norwood, contracting electrical and mechanical engineer, has moved his offices from 417 South Dearborn street, Chicago, to 116 West Illinois street, where increased shop facilities will permit the manufacture of electrical and mechanical specialties pertaining to moving bridges. The business will be incorporated about October 15 under the name of the C. H. Norwood Company. James B. Noonan, office manager, will then become a member of the firm.

The **Dunbar Manufacturing Company,** Chicago, manufacturers of railway and automobile supplies, has appointed **W. C. Irwin** district sales representative in St. Louis and the Southwest, with office in the Frisco building, St. Louis. Mr.

Irwin has been in the railway supply business for several years and at present is district representative for the Doss Nut Company, Chicago, the Railroad Supply Company, Chicago, and the Woven Steel Hose & Rubber Company, Trenton, N. J. During the war Mr. Irwin was a captain in the Engineers' Corps of the United States Army.

The Baldwin Locomotive Works and the **Standard Steel Works Company,** both of Philadelphia, Pa., have opened a branch office in the Merchants National Bank building, St. Paul, Minn. **Henry Blanchard,** sales representative in the Chicago office of the concerns, has been appointed manager of the new branch offices. Mr. Blanchard entered the service of the Baldwin Locomotive Works and the Standard Steel Works Company in the latter part of 1915, in the Philadelphia office. In April, 1919, he resigned as assistant to the vice-president in the Philadelphia office and was transferred to the Chicago office as sales representative. Prior to entering the service of these companies he served as sales engineer of the American Steel Foundries, with office in Chicago.

Lieutenant-Colonel L. P. Winby, whose appointment as managing director of the P. & M. Company (England), Ltd., with offices at 31 Budge Row, London, E. C., was announced in the *Railway Age* of June 27, page 1842, is now in this country on a six weeks' business trip for the purpose of undertaking the accounts of a few companies manufacturing railroad and engineering appliances and who desire foreign business which can be reached by the selling organization of the P. & M. Company (England), Ltd., in the British Empire and in the East. This company controls the sale of rail anti-creepers in all countries outside of the United States, Canada, Mexico and Cuba, under the patents of the P. & M. Company, Chicago.

L. P. Winby

Lieutenant-Colonel Winby was born in Glamorganshire, England, and educated at Brighton College and Cambridge University. He entered the Royal Engineers (British Army) in 1900 and served under Lord Roberts in the South African war. Leaving the army in 1902 he joined the firm of L. P. Winby & Co., Queen Anne's Chambers, Westminster, London, S. W., engaged in engineering work, including the construction of railways in South Africa. At the outbreak of war he rejoined the army and served continuously in France and Belgium as a lieutenant-colonel in the Westminster Dragoons, resuming his former work after the signing of the armistice. In June of this year he was appointed managing director of the P. M. Company (England), Ltd.

Trade Publications

Automatic Ore Unloaders.—The Wellman-Seaver-Morgan Company, Cleveland, Ohio, in a recent bulletin, presents an extended article on the W-S-M automatic ore unloader built by that company at a number of points on the Great Lakes for the unloading of cargo ships into railway cars or storage piles. The special feature of this equipment is a grab bucket of enormous capacity.

Machine Tool Equipment.—A number of two-page bulletins have been issued by the Bilton Machine Tool Company, Bridgeport, Conn. These bulletins are bound in a cover with punched holes to which others may be added from time to time and each briefly describes and illustrates a machine made by this company. These include gear milling and hobbing machines, automatic milling machines, automatic cam feed drill presses, drilling and riveting machines, etc.

Railway Financial News

Boston & Maine.—The bill in equity by Edmond F. Brown et al., owners respectively of 55 and 52 shares of Boston & Maine stock, seeking to have the court review, annul, modify or amend the order of the Massachusetts Public Service Commission approving the plan to reorganize the Boston & Maine under the act of 1915, has been dismissed by the Supreme Court of Massachusetts. The 1915 statute gives the Boston & Maine the right to acquire ownership of all leased lines and issue bonds and stock to the amount of $13,306,000 to refund the floating debt.

Chicago & Western Indiana.—This company has given notice that interest which fell due September 1 on its $15,000,000 6 per cent collateral trust gold notes, will be paid on and after September 15, at the office of J. P. Morgan & Co. The principal of these notes also matured the first of this month, but no provision for paying it has been made, except the invitation to the holders to extend the notes at 7 per cent. More than 75 per cent of the notes have been deposited under the extension agreement with the Bankers Trust Company, which will pay the September coupon on the deposited notes by check. The offer to extend the notes is still open. The notes first matured September 1, 1918, and were extended for a year, with an extra compensation of 1¼ per cent.

New York Central.—J. P. Morgan & Co. are forming a syndicate to offer $15,000,000 New York Central one-year 6 per cent notes. These notes are to be secured by pledge of $20,000,000 New York Central refunding 4½s and 75,000 shares of Reading Company first preferred stock, the collateral having a value of over 120 per cent of the amount of notes issued. The new notes are being offered at 99⅝, to yield about 6.40 per cent. The state bank commissioner of Massachusetts has declared the issue legal investment for Massachusetts savings banks.

New York, New Haven & Hartford.—Federal Judge Mack has set October 28 for the hearing of arguments on motions made by Harold Norris and more than 1,300 other stockholders of the New Haven for permission to intervene in the suit of Edwin Adams and others for the recovery of more than $150,000,000 alleged to have been wasted by William Rockefeller and other former directors of the company. Judge Mack will also hear on the same day argument on a motion for the appointment of a limited receiver to prosecute the Adams suit at the expense of the company.

Seaboard Air Line.—This company is offering an extension privilege of one year on a 7 per cent basis to holders of the $4,000,000 6 per cent notes which were due September 15. The September 15 coupon, plus a cash compensation for extension of $9.50 per $1,000 bond, is being paid at the Guaranty Trust Company, New York. The collateral behind the notes will be increased from $5,334,000 first and consolidated 6 per cent bonds to $6,000,000. The extension has been approved by the Railroad Administration. The company's gross income for 1918 and 1919 will be about $7,099,857, the agreement arrived at between the Railroad Administration and the Seaboard Air Line calling for an annual compensation of $6,920,025. Estimating corporate expense at $50,000, and taking charges as of 1917, the company should have a net income of $941,452, against $854,067 in 1917.

St. Louis-San Francisco.—The Missouri Public Service Commission has authorized this company to issue $1,283,000 of its prior lien mortgage 6 per cent bonds to reimburse the company for money actually expended for its income and to sell the same at not less than 90 cents on the dollar. The money expended represents the acquisition of additional property.

Meal Stations, on the time-tables of railroads in Sweden, are indicated by the simple but suggestive picture of a crossed knife and fork opposite to the name of the station.

Railway Officers

Railroad Administration

Central Administration

W. J. Cunningham has resigned as assistant director of the Division of Operation, effective on September 15, to return to his work at Harvard as James J. Hill professor of transportation. Mr. Cunningham organized and was appointed manager of the Operating Statistics Section early in 1918 and was appointed assistant director of the Division of Operation, and also chairman of a special committee on maintenance expenditures, on June 1, this year.

Regional

C. T. Beven has been appointed acting terminal manager at New Orleans, La., vice **E. A. Kelley,** deceased.

Federal and General Managers

E. R. Richardson, assistant to the federal manager, has been appointed federal manager of the Coastwise Steamship Lines succeeding **H. B. Walker,** who has resigned to reassume direction of the Old Dominion Line. Mr. Richardson was freight traffic manager of the Ocean Steamship Company before the steamships were taken over by the Railroad Administration.

Financial, Legal and Accounting

R. D. Anderson, assistant engineer on the Minnesota and Dakota division of the Chicago & North Western, has been appointed special engineer in the accounting department, a position recently created, with office in Chicago.

Operating

J. S. Spelman, general superintendent of the Western Pacific at San Francisco, Cal., has also been appointed division superintendent, Western Division of the Western Pacific only, with headquarters at Sacramento, Cal.

Subsequent to the separation of the Southern Pacific from the Western Pacific, the Deep Creek and the Tide Water & Southern, and the appointment of **E. W. Mason** as general manager of the latter lines, as announced in *Railway Age* of September 5, the following appointments have been made by General Manager Mason, the officers to have jurisdiction over the Western Pacific, the Deep Creek and the Tide Water & Southern: **H. K. Faye,** general freight and passenger agent of the Western Pacific, to be traffic manager; **J. P. Quigley,** superintendent Western Division, Western Pacific, with headquarters at Sacramento, to be superintendent of transportation and telegraph, with headquarters at San Francisco; **W. R. Groom** to be chief special agent and **W. T. Jacobs** to be purchasing agent. H. K. Faye in turn has appointed **B. K. Smith,** assistant general freight and passenger agent of the Western Pacific, general passenger agent, and **W. J. Shotwell,** assistant freight agent. Unless otherwise stated the headquarters of these officers are to be at San Francisco.

Traffic

O. O. Ogden, has been appointed general agent of the Natchez & Southern and the Natchez & Louisiana Railroad Transfer with offices at Natchez, Miss.

J. H. Wingfield has been appointed manager of dining cars of the Southern Railway, Lines East, with office at Washington, D. C., succeeding **W. Netherland,** deceased. **E. H. Rosecrans** has been appointed superintendent of dining cars, Lines East, with office at Charlotte, S. C., succeeding Mr. Wingfield.

Samuel L. Seymcur, assistant to George D. Ogden, freight traffic manager of the Pennsylvania, Eastern Lines, with office at Pittsburgh, has been retired under the pension rules of the company after 51 years of continuous service. Mr. Seymour will engage in general insurance brokerage business with Edwards, George & Co., Pittsburgh.

Augustus E. Ruffer, general superintendent of the Erie, eastern division, with office at New York City, has been furloughed for service with **A. T. Hardin,** regional director of the Eastern region. **Herman J. Klein,** assistant general superintendent of the Erie, Lines East, has been appointed acting general superintendent to serve during Mr. Ruffer's absence.

Obituary

George S. Leavenworth, mining engineer of the Tennessee Copper Co., engaged a great part of his life in railroad location and construction work, died August 8 at Ducktown, Tenn. Mr. Leavenworth was a graduate of the University of Vermont. At the time of his death he was engaged in mining operations in the South.

Charles M. Jacobs, member of a district board of production of munitions for the British Ministry of Munitions during the war; noted authority on tunnel construction in many parts of the world and particularly in New York, London and Paris where he had practised; superintendent of construction of six tunnels in New York City, among them the Pennsylvania tunnels and the Hudson Tubes, died Sept. 14, in London. In 1907 Mr. Jacobs was appointed consulting engineer to advise the French government on a proposed tunnel under the Seine river near Harve. Although he submitted plans and estimates the work was never done, probably because of the war. He was also consulting engineer to the contracting firm of Dade & Pelle for the tunnel under the Seine at Paris, part of the rapid transit system of Paris, completed in 1908. Until 1915 when he retired from active engineering work, he was a member of the firm of Jacobs & Davies. He visited his New York office each year until 1913.

C. M. Jacobs

Mr. Jacobs was born and educated in England, receiving a mechanical training in the workshops and drafting offices of the firm of **Charles and William Earle,** engineers and shipbuilders, Hull, England, and was finally appointed superintendent engineer in the construction of marine works; practised as consulting engineer in South Wales and London and came to the United States in 1889 by invitation of the late **Austin Corbin,** then president of the Philadelphia & Reading, to advise on various schemes in which that gentleman was interested, and more especially with reference to designing deep tunnels for rapid transit between Brooklyn, New York and Jersey City. During the period from 1890 to 1896 he was consulting engineer of the New York & New England Railroad; Elmira, Cortland & Northern; Long Island Railroad, and also chief engineer of the Blackwells Island bridge. In 1892-4, as chief engineer of the East River Gas Co., he designed and constructed a tunnel between Ravenswood, L. I., and Seventy-first St., New York City. There are laid through this tunnel two large gas mains with a 3-ft. gage railway track alongside. This tunnel was driven simultaneously from both sides of the East River. The headings met at midnight July 11, and were joined up, thus completing the pioneer tunnel under the East river. From 1902 until about 1909, Mr. Jacobs served as chief engineer of the North River division of the tunnel lines of the Pennsylvania.

EDITORIAL

Railway Age

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Another Strike!

FOLLOWING IN THE TRACKS of the "Reds" who are now trying to throttle the country by tying up the steel industry, the radical leaders of two printing trades' unions in New York have demanded that the employing printers shall, in effect, turn their respective businesses over to their employees. The vehicle is an unreasonable demand for a minimum wage of $50 a week of 44 hours and a threat to strike if not granted.

On its face, the issue is local. In fact, it is the kindling of a nation-wide conflagration with far-reaching possibilities. Under the circumstances it is our plain duty as American citizens to fight until the last vestige of fire shall have been stamped out.

At this writing it is impossible to predict when we shall again be able to get out another issue of the *Railway Age;* but we ask the indulgence of subscribers and advertisers alike until we can resume. In the interim, our editorial staff will continue to function to the end that our readers shall not fail to have a connected story of happenings in the railway world. Should it be necessary, a way will be found to get out special bulletins covering matters vital to the operation of our railways and the welfare of those who make what the railways buy.

The Steel Strike

Entirely irrespective of the pros and cons of the strike in the steel industry, it is clear that the struggle has resolved itself into a contest between Americanism and alienism. This is shown not only by the fact that it is the foreign element—mostly Slavs—who are on strike, but by the character of the leader of the strikers—in reality, William Z. Foster, secretary of the Steel Workers' National Committee. Mr. Foster is an out-and-out radical. He was at one time an organizer of the I. W. W., and in 1911 was sent by that organization to Europe, where he spent much time with the radical leaders in France, Germany and Austria-Hungary. He later left the I. W. W., and is working in the A. F. of L. on the basis that the way to work out his radical ideas is through the medium of the established labor organizations. In short, he has adopted a policy of boring his way in, or of getting into the stronger organization, of inoculating it with his theories, and of carrying them out by means of a militant minority. Further than that, he is the joint author of a book, "Syndicalism," published in Budapest in 1911, in which among other things he favors the revolution by general strike. The *Iron Age* in its latest issue has done the people a service by reproducing passages from this book, such as "The syndicalist knows that capitalism is organized robbery and he consistently considers and treats capitalists as thieves plying their trade. He knows they have no more right to their wealth they have amassed than a burglar has to his loot." Or, "In his choice of weapons to fight his capitalist enemies, the syndicalist is no more careful to select those that are 'fair,' 'just' or 'civilized' than is a householder attacked in the night by a burglar. He knows he is engaged in a life and death struggle with an absolutely lawless and unscrupulous enemy . . . With him the end justifies the means." Speaking of the general strike, he says, "The general strike is the first stage of the revolution proper." With a leader capable of preaching such doctrines as these to a mass of more or less uneducated and un-Americanized foreigners, all kinds of trouble may be expected. It is fortunate, however, that the issue is so clear. This country is American, and a question of Americanism can be decided only one way.

Working for the Public

The Plumb plan "makes him (the workman) the true servant of the public and of the country, which rewards his efficient service with an interest in the dividends of the enterprise. . . . . For a man will work for the public more unstintingly than he will work for that impersonal thing called Capital. . . ." These are the words of Grand Chief Warren S. Stone of the Brotherhood of Locomotive Engineers in an article entitled "The Labor Campaign Is On," in the September number of the Locomotive Engineers' Journal. Observation of the actions of men in government service, and particularly under the civil service rules, does not bear this statement out. Moreover the employees in railroad service are now working for the public—a public which has treated most of them handsomely, both as to wages, and working conditions. The employees generally do not seem to be at all appreciative of this; indeed they are treating the public with much the same contempt as are the profiteers. A group of railway mechanics was discussing one of their number and criticising him because of his close attention to his work. "He forgets that he is working for the government and acts as if he were still working for a private corporation," said one of them. Thoughtless words; and yet reflecting an attitude which unfortunately is all too general. Inefficiency means decreased production and higher cost of living. Democracies are slow to anger, but once aroused exert an irresistible force in righting wrongs. America has high ideals—the question is whether those who are abusing them will awaken in time to see the handwriting on the wall and profit by it.

Effects of Safety Campaigns

The "no accident" campaigns recently conducted by the United States Railroad Administration have been highly successful from the standpoint of both the railroads and the employees. Even if their effects were confined to the railroad field, they would be worth the efforts and time expended on them, but their influence is beginning to be felt much farther than their authors anticipated. The Chicago Association of Commerce has designated October 9 as "Fire and Accident Prevention Day." In its announcement of this one-day drive for the prevention of fires and accidents, the association has given credit to the Railroad Administration for what it has accomplished in drives of a similar nature, and the publicity